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BUZZARDS BAY PROJECT

The Buzzards Bay Project NEWSLETTER

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Environmental Protection at the Local Level

The Roles and Responsibilities of Town Boards

by Meghan O'Connor, Newsletter Staff

Emerson once noted that "In town meeting the great secret of political science was uncovered and the problem solved -- how to give every individual his fair weight in government, without disorder from the numbers." His words reflect the strong faith in local government that still persists today. With annual town meetings over for another year, let's take a closer look at this system of government and ask: who are the players in local government, and what are their roles and responsibilities?

Political action at the local level is an old tradition, tracing its roots to the settlement of historical New England. Indeed, it is not surprising that the first colonists on Massachusetts soil advocated local government. The emigrants believed that local laws made by people living on the spot are of greater good and benefit than laws made by a group of legislators at a distance.

So, from its beginning, Massachusetts has been predisposed to home rule and still adheres to that tradition. Home rule gives local officials and town boards authority to: 1) frame, adopt, revise, amend and enact local legislation in the form of by-laws without the involvement of state legislature; and 2) to exercise all powers of local self-government, subject to restrictions imposed by the state constitution or general law (1). In the realm of environmental protection, this "better management" includes preserving wetlands and open space, protecting threatened or endangered species habitat, maintaining public health standards and planning for growth and development.

In Buzzards Bay, attention to these issues by local boards is of vital importance to environmental quality and conservation. The United States Environmental Protection Agency can regulate discharge from sewage treatment plants and industries through a permit process, but other problems of a non-point or diffuse nature plaguing Buzzards Bay, such as stormwater run-off, failing septic systems and leaking fuel storage tanks, must be faced at the local level.

continued on page 6

Buzzards Bay Project Awards $98,479 to Local Communities

by David Janik, Buzzards Bay Project Technical Assistant

The Buzzards Bay Project through its Advisory Committee had awarded 7 minigrants to 8 communities within the Buzzards Bay watershed. Two of the minigrants were awarded to more than one community to work on pollution issues or problems shared by towns. The minigrants were awarded to the communities at a press conference held at the Marion Town House on July 6, 1989 by Mr. Steve Bliven, Acting Director of the Massachusetts Coastal Zone Management, Mr. Steve Silva, Chief of the Water Quality Section, EPA, and Mr. Edwin Pratt, Chairman of the Buzzards Bay Advisory Committee.

The Community Minigrant Program was established to encourage and support local efforts at improving water quality and protecting resources in Buzzards Bay. Local management is essential to the successful protection of the Bay's resources. The awarded minigrants address many of the common issues/problems around the Bay, including water quality, resource management, and land use. Specific areas that were selected for funding include non-

continued on page 8

IN THIS ISSUE . . .

Solar Aquatics 2
National Estuary Program 4
Glossary 8
Calendar 9
Around the Bay 12
Management Committee 16
Coastal Campaign 17
Directory 19
Issues Workshops 19

Solar Aquatics: The Benefits of Working with Nature

by Jonathan London, Newsletter Staff

While sewage treatment technology has improved since the passing of the Federal Clean Water Act in 1972, the issue of sewage disposal remains high on the environmental priority list. With few exceptions, sewage treatment today still entails expensive, odorous, chemical and land-intensive processes, that often do not meet water quality standards. One shining exception to this is the innovative Solar Aquatic System (SAS) designed and currently being implemented by Ocean Arks International and Ecological Engineering Associates. The SAS technology which has applications for wastewater, sludge and septage treatment utilizes the biological processes of natural ecosystems instead of other human-designed processes. Sewage is used in the SAS system as a raw material, or as nutrients, not as "waste" to be sanitized and disposed of.

This summer the SAS is being tested on the largest scale to date at a new research facility located on Narragansett Bay in Providence, Rhode Island. Since July, the facility has been processing roughly 20,000 gallons per day (the equivalent of effluent from 100 homes) of residential, commercial and industrial sewage diverted from the Field's Point Wastewater Treatment plant. The facility, is a series of interconnected riverine-like ecosystems housed in a 46 foot by 190 foot greenhouse and consists of a series of translucent, open-topped plastic tanks and gravel filtration beds through which the sewage flows and is treated.

Jonathan London

The SAS facility in Providence.

The Process

After a preliminary aeration, sewage is introduced into a tank containing bacteria which breakdown the soluble organic chemicals into carbon dioxide and water and convert fats, proteins, ammonia, and starches into nutrients to be used by algae also living in the tank. This process greatly reduces the biological oxygen demand (BOD), a key indicator of water quality. Following this, other varieties of algae, vascular plants and nitrifying bacteria, metabolize nutrients out of the waste stream while ammonia is broken into nitrates. These plants then assimilate the soluble orthophosphates, nitrites, and most of the remaining ammonia. In the next series of tanks, these organisms are joined by snails and zooplankton which begin to digest the sludge which precipitates out of the sewage solution. Next, several varieties of vascular plants such as the water hyacinth float on the surface and continue the uptake of nutrients (e.g. nitrates). The ability of the root mass to catch the suspended solids provides a concentrated feeding source for zooplankton, which consume the suspended solids, while also filtering the water. The water then passes to tanks inhabited by fish who consume the zooplankton as well as the remaining water plants.

John Todd, President of Ocean Arks and original designer of the SAS likens these fish to the "canaries" in the coals mines which would alert the miners the presence of toxic gases in the shafts. Healthy fish means that the system itself is healthy and functioning effectively. The last stage of treatment occurs in a marsh-like biofilter: ceramic tanks filled with sand and gravel as well as marsh plants such as the bulrush, rush reed, and cattail. The sand and gravel filter out the remaining solids, while the plants degrade the nitrates to nitrogen gas and water as well as kill off any pathogenic bacteria. They also accumulate and thus trap heavy metals. The water that leaves the system exceeds the standards the EPA set for tertiary water treatment plants. However, to avoid the delays and conditions involved in acquiring a discharge permit, the facility routes its water back into the Field's Point Plant where, to meet the current water quality standards, it is chlorinated before being discharged.

SAS Advantages

The biologically oriented SAS Technology has some distinct advantages over conventional treatment techniques which, instead of utilizing natural processes, tries to overcome them. By not using potentially hazardous chemicals such as chloramides, aluminum, or copper salts, the process avoids the environmental backlash which has often plagued high-tech "solutions." Rather than find a chemical to destroy toxins such as heavy metals, the SAS includes plant species which can bioaccumulate, and thus, remove the heavy metals from the sewage. The plants are then burned and the remains "mined" for marketable products such as lead. Other toxic materials are simply degraded to a benign form such as the "ammonia to nitrates to nitrogen gas process" outlined above. The fish can be sold, as can the vegetables which grow in the greenhouse but which are not (directly) part of the process. The inedible marsh and water plants can be composted before accumulating hazardous levels of toxins and used around the facility site as mulch.

The BUZZARDS BAY PROJECT

Fact Sheet 9/89

WHAT IS THE BUZZARDS BAY PROJECT?

BACKGROUND

In 1984, Buzzards Bay was recognized by Congress as a unique resource and was one of 4 estuaries in the Country selected for intensive study. The Buzzards Bay Project began in 1985 to characterize and assess water quality problems in Buzzards Bay and make management recommendations based on sound technical information. In 1988 Buzzards Bay was designated an estuary of national significance in the Environmental Protection Agency's National Estuary Program. Today the Buzzards Bay Project is one of 12 designated estuaries being studied in the U. S.

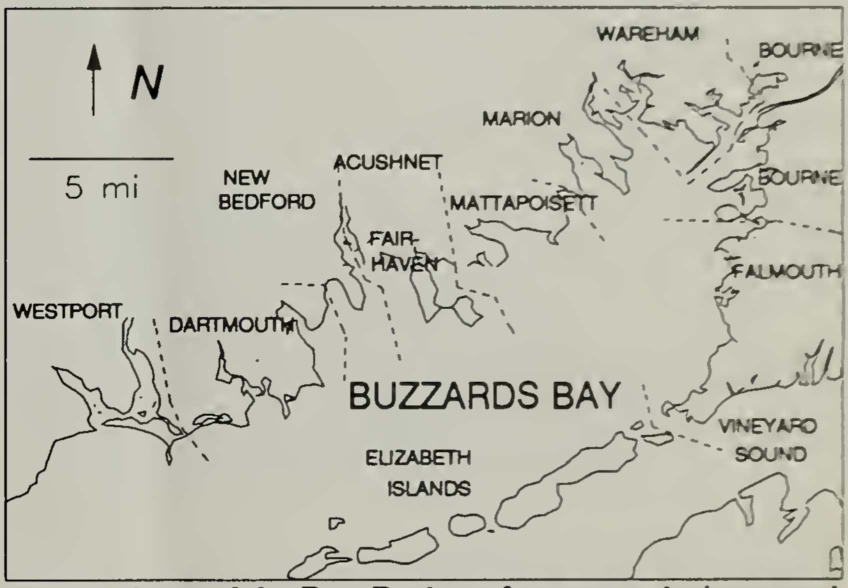
The primary goal of the Buzzards Bay Project is to assess pollution sources in Buzzards Bay and make management recommendations to protect coastal water quality and the health of living resources in the Bay. The Project has focussed on 3 major areas: 1) pathogen contamination of shellfish beds and swimming areas, 2) nutrient enrichment and eutrophication of coastal waters, 3) contamination of shellfish and finfish by toxic chemicals.

The Buzzards Bay Project is administered and funded by the Massachusetts Executive Office of Environmental Affairs (EOEA) through its Coastal Zone Management (CZM) Office, and the U.S. Environmental Protection Agency (EPA). The Project is directed by the Buzzards Bay Management Committee, a panel of federal, state, regional, and community representatives. The Management Committee is advised by the Buzzards Bay Advisory Committee, a group of local town officials; the Technical Advisory Committee, a panel of scientists and technical specialists; the Mangement Plan Advisory Committee, a panel of local, state, and federal program managers and policy specialists; and the Coalition for Buzzards Bay, an independent citizens group concerned with the future of the Bay.

ABOUT BUZZARDS BAY...

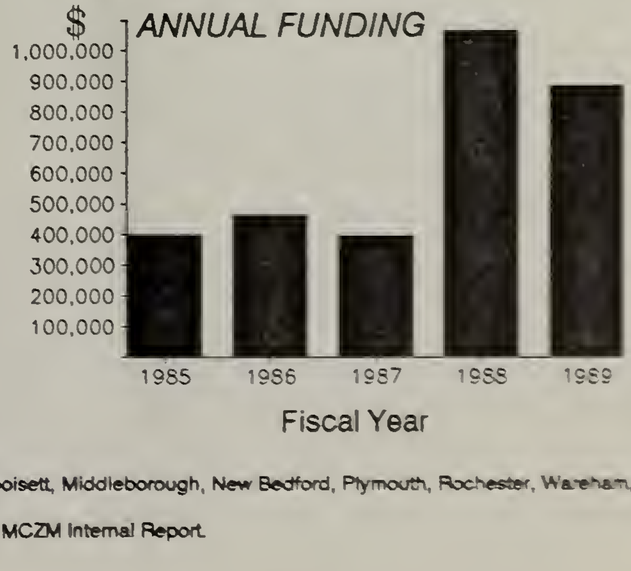
Buzzards Bay is a semi-enclosed embayment located along the southeastern coast of Massachusetts. The eastern edge of the Bay is formed by Cape Cod, and the southern edge by the Elizabeth Islands. The Bay is 28 miles long, has a mean width of 9 miles, covers 235 square miles, and has a mean depth of approximately 36 feet. Buzzards Bay is moderately flushed and exchanges water with Rhode Island Sound to the southeast, with Vineyard Sound through passages in the Elizabeth Islands, and with Massachusetts Bay through the Cape Cod Canal at its northern end. Buzzards Bay was formed by glaciers which receded about 12,000 years ago. These glaciers formed the complex network of shallow embayments and estuaries that make up Buzzards Bay.

The groundwater and surface drainage basin that surrounds Buzzards Bay covers approximately 400 square miles and includes all or significant portions of 17 municipalities in Massachusetts [1], 11 of which border the Bay. Eleven major sub-basins make up the Buzzards Bay watershed. Twelve rivers and numerous small streams enter Buzzards Bay, but much freshwater entering the Bay is discharged as groundwater nearshore, especially on the eastern shore of the Bay. Both surface water drainage and groundwater discharge transport pollutants associated with land uses and human activities located within the watershed. More than 250,000 people live in the basin surrounding Buzzards Bay and many more vacation along its shores[2]. The wastewater from approximately 135,000 people is discharged into Buzzards Bay by sewage treatment plants, and the remaining 115,000 people use on-site septic systems or land based treatment systems to dispose of their wastewater[3]. During the summer, well over 10,000 boats are moored in the Bay and a large number are launched daily.



HOW IS THE PROJECT FUNDED?

In 1989 the Buzzards Bay Project received 75% of its funding from the Federal Government and 25% from the Commonwealth of Massachusetts. By the end of 1990, $3.2 million will have been spent on the BBP.



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[1] Acushnet, Bourne, Carver,Dartmouth,Fairhaven, Fall River, Falmouth, Freetown, Gosnold, Marion, Mattapoisett, Middleborough, New Bedford, Plymouth, Rochester, Wareham, Westport

[2] calculated from Gil, L.1989. Buzards Bay Water Quality Interpretive Report, BBP Report.

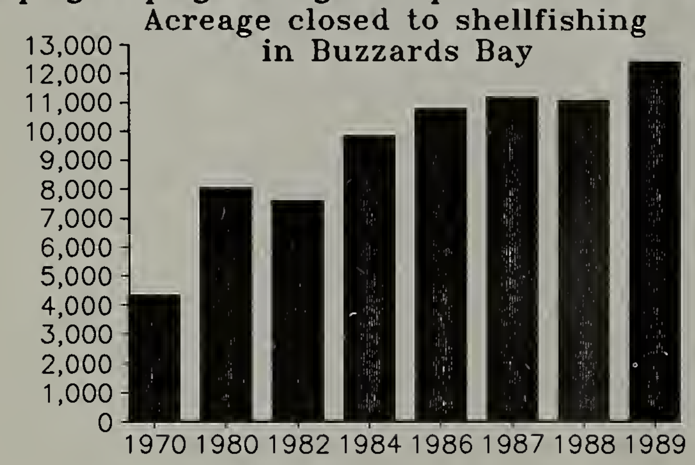
[3] Ibid. and Smith, J. 1988. The status of municipal waste water systems with discharges to coastal waters. MCZM Internal Report.

WHAT HAS THE BUZZARDS BAY PROJECT ACCOMPLISHED THUS FAR?

Between 1985 and 1988 the Project awarded $2 million to research groups to assess and characterize existing conditions in the Bay, including the status of water quality, sediments, and living resources. Research efforts have also attempted to determine causes and sources of coastal pollution as well as processes that affect the fate of pollutants in the Bay. Below are the major findings of this research.

- *COLIFORM AND PATHOGEN CONTAMINATION*

Embayments around Buzzards Bay are experiencing declining water quality because of increasing fecal coliform contamination. Consequently, more areas are being closed to shellfishing and swimming. Sources of these coliforms and pathogens include stormwater discharges, animal wastes, failing or old septic systems, and boat wastes. The BBP is testing how stormwater catchment facilities can reduce pathogen input from stormwater, and the project is also developing a septage management plan for Buzzards Bay.



- *NITROGEN LOADING*

Increased development within the Bay's recharge area is causing excess nitrogen to reach Buzzards Bay. The major sources of nitrogen are sewage and lawn and agricultural fertilizer. These high nitrogen loadings reduce the Bay's water quality which is reflected by turbid waters, blooms of algae, low levels of dissolved oxygen, and a reduction in the area of eelgrass beds and shellfish habitat. The BBP is considering ways of reducing nitrogen to nitrogen sensitive embayments, including growth management through zoning bylaws, advanced wastewater treatment, and reduction of lawn fertilizer use around these sensitive areas.

- *TOXIC POLLUTANTS*

Large amounts of polychlorinated biphenyls (PCBs) were discharged into New Bedford Harbor by industrial outfalls and through the city's sewer system between 1940 to 1970 have persisted in the sediments. Research through the Project has found that shellfish, lobster, and flounder throughout the Bay are contaminated with PCBs, especially near New Bedford. The consumption of these toxics-contaminated fish presents a possible health concern. The clean-up of PCB contamination in New Bedford Harbor is being conducted by an EPA Superfund project.

- *BUTTERMILK BAY PROJECT*

Bacterial contamination and nitrogen loading problems affecting Buzzards Bay are localized nearshore particularly in poorly flushed embayments. In Buttermilk Bay a prototype research effort was set up to fully understand the causes and effects of various pollutants. A stormwater remediation project was also funded in Buttermilk Bay to evaluate the effectiveness of stormwater catchment basins at reducing bacterial contamination in the Bay. By reducing pathogenic contamination from stormwater sources, some shellfish beds in Buzzards Bay may be reopened.

Because growth management is fundamental for protecting Buzzards Bay, a build-out analysis is being conducted on the Buttermilk Bay drainage area to estimate future nitrogen loading from additional development. Based on these findings, nutrient loading bylaws will be developed for the 3 communities adjoining Buttermilk Bay.

- *COMMUNITY MINI-GRANT PROGRAM*

Local management efforts are essential to the successful long term protection of Buzzards Bay and its resources. To initiate local efforts, the Project awarded $100,000 in Community Minigrants in 1989 to 8 towns bordering the Bay. This program was established by the Buzzards Bay Advisory Committee to encourage and support local efforts at improving and protecting the Bay's resources. This community funding is expected to continue in 1990 and possibly beyond.

WHAT IS THE PROJECT DOING NOW?

- *MANAGEMENT PLAN*

During the coming year, the Buzzards Bay Project will prepare a Comprehensive Conservation and Management Plan (CCMP) for Buzzards Bay. This document will serve as the blueprint for management options in and around the Bay. Specifically, the plan will make recommendations to local, state, and federal agencies for control of point and non-point sources of pollution, regulation and management of land uses within the Buzzards Bay watershed, and management of marine and coastal resources. The CCMP will be completed in 1990, and Buzzards Bay will be the first National Estuary to complete its management plan.

- *WORKSHOPS*

To develop management goals for the CCMP, 5 workshops are scheduled during the summer and fall of 1989. These workshops will focus on a variety of issues pertinent to the long term management of the Bay.

- **Growth Management**
- **Wetlands and Habitat Protection**
- **Shellfish Protection**
- **Toxic and Hazardous Materials Issues and Management**
- **Sewage Treatment Options and Management**

- *SANITARY SURVEYS*

The Buzzards Bay Project is assisting Massachusetts Division of Marine Fisheries (DMF) meet its 1 September 1989 US FDA obligation to complete sanitary surveys in shellfish areas in Buzzards Bay by awarding the City of New Bedford and the Barnstable County Health Department $31,280 to upgrade their facilities so that they can analyze water samples collected by DMF for fecal coliform bacteria.

- *MONITORING PLAN*

In the upcoming year the Project will develop and adopt a Monitoring Plan for Buzzards Bay. This Monitoring Plan will be used to objectively evaluate long term water quality trends in Buzzards Bay and also will help to determine what management practices are most effective at protecting and improving the Bay's water quality and living resources.

- *FINANCIAL PLAN*

The Project is identifying the costs of various management options that may implemented around the Bay, and is also identifying ways to finance these management options.

For more information, contact the Buzzards Bay Project at 2 Spring St., Marion, MA 02738, (508) 748-3600 or (617) 565-3514.

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Because it contains a much greater diversity of organisms, the system is much more stable and resistant to die-back from the chance introduction of toxins. The system is also more flexible because of its tank-to-tank flow. If a toxin is introduced, it should soon become obvious, at which point it can be contained and dealt with without endangering the rest of the system. Conventional treatment plants are often disabled because they lack both this diversity and flexibility. Unlike conventional plants, the SAS facility takes sewage which has not been filtered to separate the wastewater from the sludge. Sludge (sewage that is 10-20 times as concentrated as wastewater) is a by-product of conventional sewage treatment processes and is usually disposed of in a landfill. Sludge can cause a new series of water quality problems since it may subsequently cause leachate to enter the water table. By treating the entire waste stream, the SAS avoids the problem of sludge disposal. The food chain is so effective that there is very little sludge left over, and what does remain is mostly non-hazardous and non-problematic sand and grit. Further, the Providence facility has the ability to process additional sludge produced as a by-product from conventional facilities. At the moment however, the facility will be focusing on sewage only.

Eric Jankle, Executive Director of the Narragansett Bay Commission, believes that the SAS has great potential for sludge and septage in the context of subdivisions and other self-contained developments. According to Jankle, the treatment of these materials by SAS would be a vast improvement over the economically, environmentally, and politically problematic process of pumping out holding tanks, and then trucking the toxic wastes to a questionably, "sanitary" landfill.

The SAS has the added advantage of being competitively priced to build as well as to operate. This makes it attractive to municipalities and other levels of government which are in need of immediate implementation but which are strapped for funds. Once operating, the facilities will not cause a tax increase to the public because it is operated on a user-fee basis. The facility itself provides a pleasant environment both for the workers inside and to the neighbors outside. There are no foul smells, noise, pest problems, or unsightly buildings.

Not surprisingly, politicians from many communities around New England are approaching Ocean Arks International and Ecological Engineering Associated with requests for potential facilities in their areas. This summer, Ecological Engineering Associated will be building a full-scale commercial Solar Aquatic septage treatment facility in Harwich, MA, and a pilot septic and boat waste treatment facility in Marion, MA. Interest has been shown from as far away as the west coast of Africa by the governments of Ghana, Ivory Coast, and Sierra Leone.

Additionally, the technology has received almost unanimous praise from state environmental agencies, private environmental organizations, community and political leaders, and the media. Todd and Ecological Engineering Associated executives have been roundly lauded not just or providing a needed service but for having the courage try something innovative and for providing the model r others in the field to be equally creative.

Testing and Research

The Providence facility will be providing the Rhode Island Department of Environmental Management (DEM) and the Narragansett Bay Commission (NBC) with a chance to test the ability of SAS to meet the water quality standards. Routine water quality tests on nitrate, BOD, suspended particles, and bacteria levels will periodically be done by NBC staff. NBC is a public corporation charged with operating the Fields Point Wastewater Treatment Facility and to provide related sewage services for the Providence area. They have donated the site and the sewage to Ecological Engineering Associated. The DEM has the authority to grant discharge permits and the responsibility to enforce the state and federal water quality standards.

The Solar Aquatics System is "an opportunity for some innovative ecological research," according to John Teal of the Woods Hole Oceanographic Institute (WHOI). Teal will be leading a team of researchers from WHOI, New Alchemy Institute, Rhode Island College, the University of Rhode Island, Brown University, Massachusetts Institute of Technology, the University of Massachusetts-Boston, the Marine Biological Laboratory, and ISNAR. These scientists will be concentrating on how SAS works and how it can be improved. It is in this last variable of time, that Ocean Arks International and Rhode Island College affiliated researcher Alan Liss sees the "magic" of the technology. According to Liss, the challenge is to learn what organisms perform what functions in natural water purification processes so they can be manipulated in the SAS to speed up the process without upsetting its balance.

The Past

The Providence facility has two predecessors. The first, designed and operated by Ocean Arks International and Four Elements Corporation (the predecessor to Ecological Engineering Associated) was located at the Sugarbush Mountain Ski resort in Vermont. Housed in its 27 by 32 foot green house, it processed 3,000 gallons of sewage per day from April 1987 to May 1988 and operated on the same design principles as the current facility. The Sugarbush facility provided Todd with documentation of the technology's effectiveness as compared with conventional techniques such as the potentially hazardous breakpoint chlorine plant which operated simultaneously with SAS facility. According to an Ecological Engineering Associated document, the facility reduced the BOD by 98.2%, the TSS level by 98.6%, the NH3-N by 97.9%, and the TKN by 96.9%. It also provided Todd with organisms such as the varieties of snails and bacteria which now inhabit the tanks of the Providence facility.

The second predecessor was a septage purifying facility located in Harwich, MA which operated during the summer of 1988 and was composed of a series of 20 interconnected tanks each holding their component of the purification food chain. The facility gave the town an option to deal with their serious septage problem which had placed them in violation of the state's water quality standards for five years. Tests indicated that the facility lowered the BOD by 99.6%, while reducing the nitrogen mass by 85-98% and the phosphorous mass by 65%. The ultimate proof of the pilot's success is of course the above-mentioned, full-scale, 4,800 gallon per day septage facility which Ecological Engineering Associated will be building at the town's request in Harwich this summer.

continued on page 17

The Legislative History of the National Estuary Program

by Fred Mock, Newsletter Staff

[editor's note: The Buzzards Bay Project began in 1985, and now that we are heading toward a Comprehensive Conservation and Management Plan, we felt it was time to stop and review how we got to this point.]

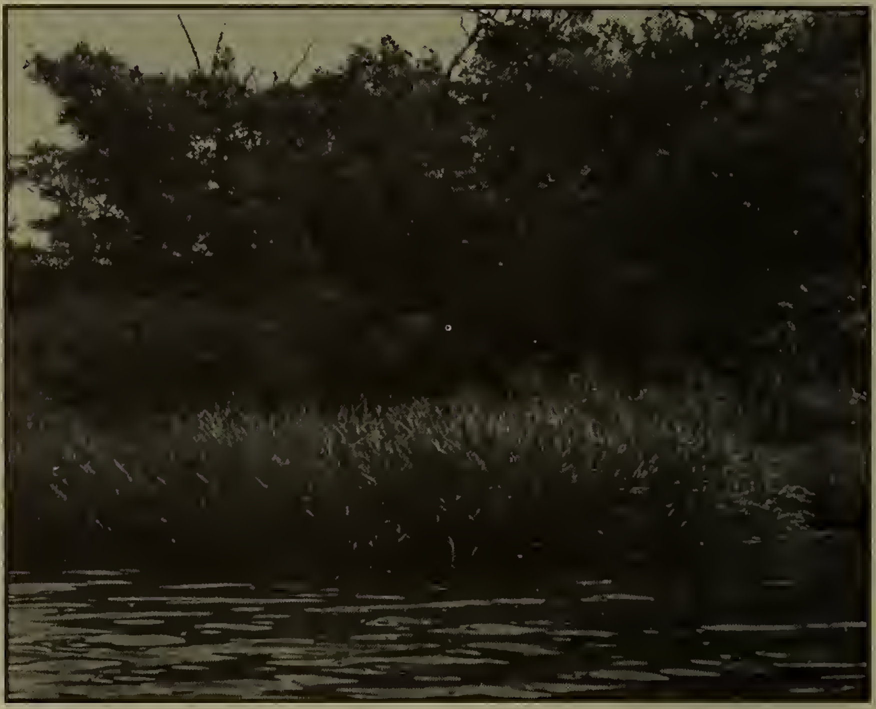
In 1987 Congress passed the Water Quality Act, of which Section 320 is known as the National Estuary Program (NEP). One purpose of the NEP is to "identify nationally significant estuaries that are threatened by pollution, development, or overuse" and to "promote comprehensive planning for, and conservation and management of, nationally significant estuaries." (Notes following Title 33, Sec. 1330). Our own Buzzards Bay was designated an "estuary of national significance" on January 29, 1988.

The NEP affects more than just estuaries; it also includes estuarine zones, which Congress has defined quite broadly to include "salt marshes, coastal and intertidal areas, bays, harbors, lagoons, inshore waters, and channels," (Title 33, Sec. 1254(n)(4)) along with "associated aquatic ecosystems and those portions of tributaries draining into the estuary up to the historic height of migration of anadromous fish or the historic head of tidal influence, whichever is higher." (Title 33, Sec. 1330(k)). Congress specifically added the second half of the definition of "estuarine zones" to the National Estuary Program to address the "problems created by the degradation of wetland areas or upstream diversions of water from tributaries into the estuary." (Legislative History of Water Quality Act of 1987, p.34).

In particular, Congress found that estuaries are significant fish and wildlife resources and also present recreational and economic opportunities. However, growing coastal populations and development threaten these valuable resources. Thus, "maintaining the health and ecological integrity of these estuaries is in the national interest." (Notes following Title 33, Sec. 1330).

The NEP allows the governor of a state to nominate to the Administrator of the Environmental Protection Agency (EPA) an estuary that is either wholly or partially within the jurisdiction of his or her state as an "estuary of national significance." In concurrence with such a nomination, a governor may request the establishment of a management conference to create a "comprehensive management plan" for the specific estuary. When making such a nomination, a governor must not only describe the need for the conference, but also its likelihood of success.

In addition, the Administrator of the EPA may solely determine the need for a management conference. But whether at his own initiative or that of a governor, the Administrator is to use his own discretion in assessing the need to establish a given estuary as one of national significance. In deciding whether to include an estuary within the National Estuary Program, the Administrator needs to study the estuary in regards to "the ecological significance of the estuary; the biological productivity of the estuary and its contribution to fish and wildlife resources of commercial and recreational significance; the degree to which commercial, residential, recreational, or industrial activities within the estuary. . . have impaired or may impair the health and ecological integrity of the estuary; and the degree to which comprehensive planning management may contribute to the wise use of the estuary and to its health and ecological integrity." (Legislative History of Water Quality Act of 1987, p. 32).


Lloyd Center Staff

The NEP sets aside sixteen national estuaries which the Administrator is to give priority consideration. Included among these are Buzzards Bay and Massachusetts Bay, which includes both Cape Cod Bay and Boston Harbor. Although Buzzards Bay is technically included in the NEP, it already has been under analysis since 1985 when Congress appropriated $4 million to the EPA to study and assess four major estuaries around the country: Buzzards Bay, Narragansett Bay, Long Island Sound, and Puget Sound in Washington. Thus, until the passing of the Water Quality Act in 1987, the NEP was operated on an informal basis through the EPA's Office of Marine and Estuarine Protection. The study of Buzzards Bay, of course, is the Buzzards Bay Project itself. And since its January 1988 designation as an estuary of national significance, Buzzards Bay is now protected by a formal partnership among the EPA, the Buzzards Bay Project, and the Commonwealth of Massachusetts.

The establishment of a management conference, as required by the NEP, is meant to fulfill several purposes. A conference should "assess trends in [the] water quality, natural resources, and uses of the estuary." (Title 33, Sec. 1330(b)(1)). In order to identify, and subsequently correct, various environmental problems within the estuary, the conference also needs to analyze data on toxics, nutrients, and natural resources within the estuarine zone. A conference also must develop plans to eliminate pollution sources, thus restoring and maintaining "the chemical, physical, and biological integrity of the estuary." To achieve this goal not only must water quality be maintained, but the shellfish, fish, and wildlife populations must be kept in balance. Plans drawn up by a management conference "shall assure that the designated uses of the estuary are protected." (Legislative History of Water Quality Act of

1987, p. 33).

When Buzzards Bay was designated an "estuary of national significance" in January 1988, an early 1990 goal was established for the development of a Comprehensive Conservation and Management Plan (CCMP). As of mid-June 1989, an annotated outline of the CCMP had been prepared, and research for the project was being completed. Through the Lloyd Center for Environmental Studies, the Buzzards Bay Project will be holding "goals/issues workshops" this summer and fall. The object of the workshops is to present issues concerning Buzzards Bay to the public in the hopes of receiving feedback which will help in making recommendations for the final CCMP. Overall, the project is moving along as scheduled with the goal still set for March 1990.

The National Estuary Program is not wholly run by the federal government. Thus, the management conference must also make sure that any plans which are drawn up to protect the estuary are implemented through the coordinated effort of a given state and any federal and local agencies participating in the conference. Further, any actions taken pursuant to a management plan are to be monitored by the conference.

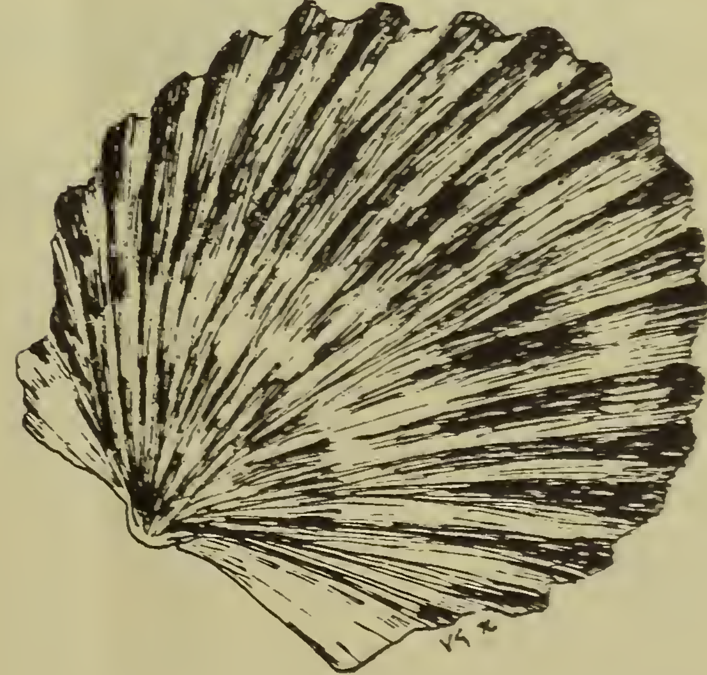
Typical management conference participants would include the EPA Administrator, representatives of the state or states whose estuary is under consideration, and any appropriate interstate or regional agencies. The Administrator may also decide that a particular federal agency, local government, industry, educational institution, or even members of the general public should have representation in a management conference. A management conference can potentially be a drawn out process, as it is permissible for one to last for up to five years and even longer if officially extended by the Administrator.

Part of the reason for a drawn out conference would appear to be the bureaucratic details that any conference will need to consider. For example, the Coastal Zone Management Act allows for the development of "special area" management plans. Obviously coordination between plans developed under this act and the NEP is necessary. States also have established coastal zone management programs which require additional coordination. The NEP allows for efficiency, however, by permitting incorporation of federal programs into already existing state programs.

One of the most crucial aspects of estuarine protection is water quality maintenance. Among the problems to be considered here are allowable toxin levels in a given estuary, the best methods of controlling pollution sources, and possible conservation measures for estuary life.

Implementation of a conference management plan begins upon the approval of both the EPA Administrator and the governor or governors of affected states. Of course, nothing will happen without funding. Thus, the Administrator is authorized to make grants to agencies, institutions, or individuals so they can assist in whatever capacity is needed to develop a workable management plan. Anyone who receives a grant must report back to the Administrator within 18 months of receipt of the grant and once every two years thereafter. A $12 million cap was placed on authorization for each fiscal year from 1987 through 1991. In addition, the Administrator, if he so chooses, can designate up to $5 million annually from the authorization to go to the Administrator of the National Oceanic and Atmospheric Administration (NOAA) for water quality monitoring and ecosystem analysis of estuaries.

The EPA Administrator must submit to Congress at least once every two years a comprehensive report detailing the specific programs that are under the auspices of the NOAA Administrator. The report should include "an assessment of the state and health of the Nations' estuarine zones," and a discussion of pollution problems within these zones and measures being implemented to correct them. (Legislative History of Water Quality Act of 1987, p. 34).



Environmental Protection at the Local Level

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"Most environmental decisions come on the local scene with the boards of health, conservation commissions, planning boards and other local bodies," said Steve Bliven, Acting Director of Coastal Zone Management. It often goes unappreciated, but local officials have the authority to adopt and enforce bylaws (with town meeting approval) that will either tighten up or further the intent of existing state and federal regulations. Below is a description of a few select boards that have a direct influence on environmental protection in Buzzards Bay.

Boards of Selectmen

When town governments were first established, people met regularly and frequently in town meetings to conduct town business as it came up. The town meeting was the governing body of the town. When these frequent meetings became too unwieldy, the town "selected" a few of its community leaders to carry out day to day operations so that the town wouldn't need to meet so often. These first selectmen were identified as early as 1654[1].

Today, Boards of Selectmen are regarded as the chief executive officers of the town. The boards' duties include but are not limited to: 1) calling town meetings, both annual and special; 2), warranting preparation, including response to petitions and entry of articles at any meeting; 3) presenting budgets; and 4) sponsoring executive articles and leading debate and explanations in town meetings.

Often, the Board of Selectmen take on responsibilites for other boards within the town. For example, in Gosnold, an island community where there are few year-round residents, the Board of Selectmen also assume responsibility for the Board of Health, the Planning Board, etc. Depending on the size of the town and the resources available for manning each post, the Boards of Selectmen in each town vary considerably. The chart below lists responsibilities assumed by each Board of Selectmen in the towns bordering Buzzards Bay.

BOARDS UNDER THE MANAGEMENT OF TOWN SELECTMEN

	Planning Board	Board of Health	Conserv. Comm.	Board of Appeals
Acushnet	no	no	no *	no
Bourne	no	no	no *	no
Dartmouth	no	no	no	no
Fairhaven	no	yes	no *	no *
Gosnold	yes	yes	yes	yes
New Bedford	no	no	no	no
Rochester	no	no	no *	no *
Marion	no	yes	no	no
Mattapoisett	no	no	no	no
Wareham	yes	yes	yes	yes
Westport	no	no	no *	no *

*appointed by selectmen

Conservation Commissions

Conservation Commissions in Massachusetts were born as a result of two state regulations.

Massachusetts General Law (Chap. 40 sec.8C) established the Conservation Commission Act in 1957. This act enabled local towns to establish a special commission to protect natural resources, serve as an advisor in municipal decision-making, accept gifts of money and land (with approval of town council or selectmen) and regulate local wetland use. When the state passed the Wetlands Protection Act in 1972, most municipalities found it necessary to establish a conservation commission to fulfill new and relatively stringent state wetland regulations. The Conservation Commission Act allowed them to do this, and so by 1978, the majority of Massachusetts municipalities had adopted the Act and formed such commissions.

According to the Act, the commission consists of three to seven people appointed by the selectmen. Money is voted to the commission for use in operating expenses, capital expenses and land aquisition. Generally, the commission works closely with the planning board to ensure consistency of conservation, preservation and development of natural resources. Conservation commissioners review planning board rules and regulations, zoning bylaws and all filed development plans.

Conservation commissions determine if and how much a project will affect wetlands and what steps can be taken to protect them. The commission also has authority to order modifications of plans if they will damage or disrupt a wetland area, supervise any portion of a project that takes place in a wetland, protect areas where drinking water is supplied and supervise hazardous waste problems and disposal. Conservation commissions have the power to regulate within 100 feet from the bank of any inland stream, marsh or swamp. And of course, home rule tradition allows this local entity to tighten up state wetlands regulations by passing local wetland bylaws. For example, Falmouth recently drew up new wetlands regulations which are much stricter than the state's. According to the authors of the document, "it [the regulations] will equip the Commission with the legal tools necessary to effectively prevent people from building too close to wetlands."

The Planning Board

Massachusetts state law requires that all communities with populations of 10,000 or more establish a governmental unit with the authority and responsibility to conduct planning activities[2].

The planning board is the group most closely involved in formulating these plans encompassing growth policies, change and development within a town.

The planning board also administers subdivision control laws. How many houses and where they should be placed are under authority of the planning board. Also, the board develops and reviews plans for open space, agricultural, recreational, housing, subdivision and industrial or commerical zoning. Zoning bylaws generally spell out what a property owner can and cannot do with the land. These plans require a majority 2/3 vote at town meetings.

A recent editorial of Marion's paper, *The Sentinel* lauds the pro-active stance of the town's planning board. It says, "Marion's planning board has done what planning boards in many towns should do: plan. Too often, these boards become nothing more than red-tape dissemenators who plead defenseless against developers and problematic land proposals. Some argue that their only purpose is to ensure that all projects meet the restrictions of the existing local and state bylaws and regulations. While that is indeed part of their job, and a very important part, it is not all they do."[3]

Boards of Health

Boards of health are responsible for formulating and enforcing regulations affecting the environment and actions affecting health. One of the oldest specific duties and powers are those to control the spread of infectious disease dangerous to public health and to "make reasonable health regulations." They perform percolation and water purity tests on the land and determine whether the permittee has a suitable leach-field for a septic system. All plans that pass from the conservation commission and Planning Boards must be approved by the Board of Health for a permit to be issued.

According to Bruce Tripp, former coordinator of the Buzzards Bay Project, "Boards of health have a phenomenol amount of power in Massachusetts and that power is very underutilized. Just getting them more pro-active in the regulatory system is important. They have to understand how to become involved and why they should become involved."

An example of a board of health that initiated needed changes is in Chatham, a town located on the Cape. Several years ago, Oyster Pond, a prime growing area in Chatham was closed when high fecal coliform counts were found there. The Town took action, creating its own laboratory for water quality testing. The Board of Health also passed a regulation requiring all septic systems to be tested before homes could be sold. The result of this mandatory testing showed that 10% of the systems were failing and another 10-15% were marginal. By addressing the problem, the Board of Health was instrumental in later re-opening of the shellfish beds.

Board of Appeals

To protect the rights of people under subdivision control and zoning bylaws, an impartial local body is required by law to authorize variations in zoning decisions. The members of appeals boards are appointed by the town selectmen. Decisions of the board may be appealed by the Superior Court by a person aggrieved or by a municipal officer or board.

For example, in Falmouth there are three cases currently in court in which the Board of Appeals decisions are in direct contradiction to the town's Planning Board. Decisions of these kinds are require careful deliberation because of their longstanding nature. Once a variance is granted to a piece of land, it is carried to all subsequent owners.

Conclusion

As boards utilize the power at their disposal to address water quality of Buzzards Bay and surrounding land use, protection of this natural resource can be achieved. Douglas Costle ended his address to local citizens by telling them: "Pick a spot on the bay to fight for that has public significance and win it. Use that as a window to a larger perspective. It is important that people see that you are able to affect change. The way to win a battle is to bring together a variety of people from all walks of life to get the political clout needed to do something."

In these words you may find the echo of Emerson's belief in the "individual's fair weight in the government" and the Commonwealth's long-standing faith of the people in the people.

References Cited

1. Gere, Edwin A. Jr., Modernizing Local Government in Massachusetts, University of Massachusetts, Amherst. 1984.

2. Levitan, Donald. Your Massachusetts Government 10th Edition. Government Research Publications. 1984

3. Marion Sentinel, Editorial. April 12, 1989.

Buzzards Bay Project Awards $98,479

continued from page 1

point source pollution, marine head pump-out facilities planning and implementation, marine waste oil disposal planning, shellfish management, and local enforcement of wastewater disposal regulations. Seven proposals were selected for funding out of a pool of 16 proposals.

New Bedford and Fairhaven received a $10,000 grant to study and develop a plan for marine pump-out facilities for septic wastes and used oil in the Acushnet River Harbor. This plan will be incorporated into a broader Harbor Management Plan currently being worked on by the two towns.

Dartmouth received a $13,200 grant to delineate the Apponagansett River Watershed, document the current land uses within the watershed, and develop a management plan to improve water quality in the river. The goal of the proposal is to stop the pollutants currently entering the river so shellfish beds near the mouth of the Apponagansett River can be opened.

Acushnet, Rochester, and Marion received a $25,000 grant to establish a Regional Health District and to hire a Regional Sanitarian to help the towns more effectively carry out the requirements of Title 5 and local wastewater disposal bylaws.

Wareham received a $20,000 grant to monitor boat traffic in its marinas, mooring areas, and launch ramps, collect boat use data through a questionnaire, and establish a grid systems for moorings within the harbor. The work will reduce the potential for user conflicts and better manage the coastal resources of the town.

Fairhaven received a grant for $5,279 to hold a series of seminars for each of the town boards. These seminars will be used to educate local boards on their legal responsibilities as well as to foster communication and coordination between boards within town and between towns.

Westport received a $5,000 grant to purchase a holding tank and pump-out equipment for a marine head pump-out facility which would be operated by the community. This would improve water quality in the Westport River area of Buzzards Bay by eliminating marine wastewater discharges into the harbor.

Marion received a grant for $20,000 to conduct a 3 year water quality monitoring effort of its embayments using a network of local citizen volunteers to collect the samples which would then be analyzed by certified laboratories in the Buzzards Bay area.

The Buzzards Bay Project hopes that much of the knowledge and experience gained by these local communities through the completion of theses projects will be helpful to other communities in the Buzzards Bay region who are trying to solve many of the same problems. The Project also expects to fund another round of community minigrants to strengthen the role local Bay communities will have in improving and protecting the water quality and living resources of Buzzards Bay.

GLOSSARY

A Regular Feature of the Buzzards Bay Project Newsletter

Anadromous Fish - Fish that travel back from the sea to freshwater rivers in order to breed.

Ecosystem - The complex of a biological community and its environment functioning as an ecological unit.

Effluent - Waste material that flows into the environment.

Heavy Metals - Metals in the waste stream (e.g. copper, zinc, iron, chronium and aluminum). They last a long time in the environment.

Nitrifying Bacteria - Bacteria that convert one form of nitrogen to a usable (by plants and animal) form.

Pathogen - A specific, causative agent of disease (in particular a virus or bacterium).

Septage - The material in a septic tank.

Sludge - The concentration of solids removed from sewage during wastewater treatment.

Tributaries - A stream (or small body of water) feeding a river (or larger body of water).

Meghan O'Connor

From left: Steve Bliven, Acting Director of CZM, Steve Silva, EPA, presenting an award to one of the minigrant recipients.

CALENDAR

SEPTEMBER

Now-Sept. 24
TUESDAYS-SUNDAYS

Buzzards Bay Exhibit - at the Lloyd Center for Environmental Studies. Open: 9:00 a.m.-5:00 p.m. Call the Lloyd Center for more information at (508)990-0505.

16
SATURDAY

Issues Workshop: Shellfish Protection - This workshop will focus on shellfish bed closures and their effects, managing sources of shellfish contamination and more. Sponsored by EPA and Mass. EOEA. 9:00 a.m.-3:30 p.m. Location: Tabor Academy, Marion. Fee: $5. Call the Lloyd Center for registration and more information at (508)990-0505.

16
SATURDAY

Annual Harvest Festival - Join New Alchemy Institute at their 20th Annual Celebration for a full day of workshops, entertainment, music, and good food. At 1:30 p.m. the keynote speaker will be Frances Moore Lappe, author of *Diet for a Small Planet*, and *Rediscovering America's Values*. Fee: $5 for admission, may buy lunch. Call New Alchemy Institute for more information at (508)564-6301.

17
SUNDAY

Fall Wildflowers - This free weekly walk given by the Lloyd Center will begin at 1:30 p.m. For more information call the Lloyd Center at (508)990-0505.

17
SUNDAY

Raffle Drawing for Winner of Hot Air Balloon Ride to benefit Westport's open space plan. Call Westport River Watershed Alliance for details at (508)636-3016.

19-Oct. 3
TUESDAYS

Hands on Astronomy Workshops - 7:30 p.m.-9:00 p.m. at the Cape Cod Museum of Natural History. Preregister by September 1. Call the Museum at (508)896-3867 for more information.

20-Oct. 4
WEDNESDAYS

Astronomy Observation Nights - Join the Cape Cod Museum of Natural History to watch the stars. 7:30 p.m. at Thompson Field in Harwich Center. Call the Museum for more information at (508)896-3867.

20
WEDNESDAY

Trip to Woods Hole Museum and New Alchemy Institute - Join Cape Cod Museum of Natural History for this trip at 9:00 a.m. Call the Museum for more information at (508)896-3867.

21
THURSDAY

Westport River Watershed Alliance - Annual Meeting. Keynote speaker will be John DeVillars, EOEA Secretary. 7:30 p.m., location TBA. Call the Westport River Watershed Alliance for details at (508)636-3016.

22-24
FRIDAY-SUNDAY

14th Annual Bird Carver's Events - Exhibit: Fri.-Sat. 10:00 a.m.-5:00 p.m., Sun. 10:00 a.m.-3:00 p.m. at the Cape Cod Museum of Natural History. Auction: Sunday 3:00 p.m. at Ocean Edge Conference Center and Resort. Call the Museum for details at (508)896-3867.

23
SATURDAY

Flotsam and Jetsam - This Second Annual Seaside Litter Pick-up is a part of Coastweeks '89. Call the Lloyd Center for more information at (508)990-0505.

23
SATURDAY

Printing with Gadgets - Drop-in activity at the Children's Museum in South Dartmouth from 11:00 a.m.-12:30 p.m. Fee: free with Museum admission.

23
SATURDAY

Coastweeks '89 Clean-up - Westport River Watershed Alliance will meet at Gooseberry Neck at 10:00 a.m. Call the Alliance for more information at (508)636-3016.

23
SATURDAY

Farmer's Market and Fall Festival - Join the Thorton W. Burgess Society Museum on the grounds of Wing Elementary School Route 130 in Sandwich for this event. 10:30 a.m.-3:00 p.m. Call the Burgess Society for more information at (508)888-6870.

23-24
SATURDAY-SUNDAY

Bird-A-Thon - Sponsored by the Cape Cod Bird Club. Call (508)477-3847 for details.

continued on next page

CALENDAR

continued from previous page

24
SUNDAY

Fun Run and Road Race - Join the Children's Museum for these events at 10:00 a.m. and 11:00 a.m. Call the Museum for more information at (508)896-3867.

30
SATURDAY

Issues Workshop: Toxics and Hazardous Materials - This workshop will focus on the issues of seafood safety, oil spills, dredging and controlled use of hazardous chemicals. Sponsored by EPA and Mass. EOEA. 9:00 a.m.-3:30 p.m. Fee: $5. Location: Tabor Academy, Marion. Call the Lloyd Center for registration and more information at (508)990-0505.

30
SATURDAY

Designing with Shapes - Drop-in activity at the Children's Museum in South Dartmouth. 11:00 a.m.-12:30 p.m. Fee: free with Museum admission.

30
SATURDAY

Program on Galapagos - Lecture and Slide Show held at Cape Cod Museum of Natural History. 7:30 p.m. Call Museum for details at (508)896-3867.

OCTOBER

1
SUNDAY

Birds of the Maritime Forest - Free weekly walk given by the Lloyd Center at 9:00 a.m. Call the Lloyd Center for more information at (508)990-0505.

2, 5, 9
MONDAY, THURSDAY, MONDAY

Peregrine Watches - Join the Cape Cod Museum of Natural History at 2:00 p.m. to observe these birds. Call the Museum for details at (508)896-3867.

4-25
WEDNESDAYS

After School Naturalist Program - Call Cape Cod Museum of Natural History for more information at (508)896-3867.

6
FRIDAY

Dartmouth's Rivers - Slocums/Paskamansett Watershed Art Show Opening at the Lloyd Center. 6:00 p.m. Call the Lloyd Center for more information at (508)990-0505.

6
FRIDAY

First Friday - The Children's Museum in South Dartmouth will be open 5:00 p.m.-8:00 p.m. with free admission.

6
FRIDAY

Vanishing Heritage-Wildflowers of Cape Cod - Thorton W. Burgess Society Museum is sponsoring this event at the grounds of Wing Elementary School, Route 130, Sandwich. 7:30 p.m. Call Burgess Society for details at (508)888-6870

7
SATURDAY

Canoe Trip - Join the Lloyd Center to both canoe the rivers and learn about the Slocums/Paskamansett Scenic Rivers Project. Call the Lloyd Center at (508)990-0505 for more information.

7
SATURDAY

Star Walk - Lloyd Center Free Weekly Walk. 7:00 p.m. Raindate: October 8. Call the Lloyd Center for more information at (508)990-0505.

7
SATURDAY

LeCount's Hollow Beachwalk - Join the Cape Cod Museum of Natural History on this walk. Meet in Wellsley at 10:00 a.m. Call the Museum for details at (508)896-3867.

7
SATURDAY

Plastic Pollution Pick-up of Sandwich Beaches - Help the Thorton W. Burgess Society Museum clean the beaches. 10:00 a.m.-1:00 p.m. Call the Burgess Society to sign up at (508)888-6870.

7-28
SATURDAYS

Seabird Program - Call the Cape Cod Museum of Natural History for more information at (508)896-3867.

11
WEDNESDAY

Slide Presentation on the Slocums/Paskamansett Watershed Scenic Rivers Project. This event is a part of Coastweeks '89 and will begin at 7:00 p.m. Location: TBA Call the Lloyd Center for more information at (508)990-0505.

14

SATURDAY

Issues Workshop: Sewage Treatment Options - This final workshop will focus on individual sewage options, disposal and treatment of wastewater, septage and sludge management and the balance between land and water. Sponsored by EPA and Mass. EOEA. 9:00 a.m.-3:30 p.m. Fee: $5. Location: Clark 5, Woods Hole Oceanographic Institution. Call the Lloyd Center for registration and more information at (508)990-0505.

14

SATURDAY

Help Make 1000 Cranes - Drop-in activity at the Children's Museum from 11:00 a.m.-12:30 p.m. Fee: free with Museum admission.

14

SATURDAY

Preach in the Beach - Meet the Cape Cod Museum of Natural History on Chatham Break at 2:00 p.m. Call the Museum for details at (508)896-3867.

14

SATURDAY

Safe and Sightly Lawns - Join the New Alchemy Institute and guestspeaker Dave SimSar at 10:00 a.m.-12:00 p.m. Call the New Alchemy Institute at (508)564-6301 for details.

15

SUNDAY

Buckmoths and Berries - Lloyd Center Weekly Walk. This free walk will begin at 1:30 p.m. Call the Lloyd Center to register at (508)990-0505.

21

SATURDAY

Balston Beachwalk - Meet the Cape Cod Museum of Natural History in Truro at 10:00 a.m. Call the Museum for details at (508)896-3867.

22

SUNDAY

Beach Ecology - Lloyd Center Weekly Walk. This free walk will begin at 1:30. Call the Lloyd Center to register at (508)990-0505.

28

SATURDAY

Indoor and Greenhouse Gardening - Colleen Armstrong will be at the New Alchemy Institute from 10:00 a.m. to 12:00 p.m. to explain about gardening inside. Fee: $10/ $18 for 2 in a household. Register by phone at (508)564-6301 or at the door.

29

SUNDAY

Fall Leaves - This Lloyd Center weekly walk will focus on why leaves change colors in the fall. Free. 1:30 p.m. Call the Lloyd Center to register at (508)990-0505.

NOVEMBER

3

FRIDAY

First Friday - The Children's Museum in South Dartmouth will be open 5:00 p.m.-8:00 p.m. with free admission.

4

SATURDAY

Terrific Toads - Drop-in at the Children's Museum in South Dartmouth 11:00 a.m.-12:30 p.m. Fee: free with Museum admission.

5

SUNDAY

Winter Waterfowl - This Lloyd Center Weekly Walk is free and will begin at 9:00 a.m. Call the Lloyd Center to register at (508)990-0505.

10

FRIDAY

Festive Fish - Drop-in activity at the Children's Museum 11:00 a.m.-12:30 p.m. Fee: free with Museum admission.

11

SATURDAY

Moonwatch - This Lloyd Center Weekly Walk will begin at 7:00 p.m. If it rains or is cloudy, the walk will be held Sunday, November 12. Free. Call the Lloyd Center for more information at (508)990-0505.

18

WEDNESDAY

Surprising Snakes - Drop-in activity at the Children's Museum in South Dartmouth. 11:00 a.m.-12:30 p.m. Fee: free with Museum admission.

19

SUNDAY

Turkeys and other birds of Myles Standish State Forest - This Lloyd Center Weekly Walk is free and will begin at 9:00 a.m. Call the Lloyd Center at (508)990-0505 to register.

25

WEDNESDAY

Magnificent Mammals - Drop-in activity at the Children's Museum 11:00 a.m.-12:30 p.m. Fee: free with Museum admission.

AROUND

by Greg Barnes, Anita Golton, Jonathan London, Fred Mock, and Meghan O'Connor, Newsletter Staff

This section of the NEWSLETTER *is intended to reflect the issues and opinions which are being presented to the public through the local media, and does not represent the opinions of the* NEWSLETTER *staff or the U.S. Environmental Protection Agency. Discussion is encouraged. Responses may be submitted to the "Letters to the Editor" section.*

Development Slowdown

According to many real estate analysts, Massachusetts, along with all of New England, is currently in the midst of the most significant development slowdown in the past fifteen years.

A report from the Cape Cod and Island Board of Realtors showed an 8.9% decrease in the number of properties sold between the first six months of 1988 and the first six months of 1989. The overall dollar value registered an 11.9% decrease compared to the same period in 1988. In June alone, there was an 11.6% decrease in the number of properties sold, and a 14.8% decrease in the total dollar value compared to June 1988. Rhode Island Realtors report that land is staying on the market an average of 16 days longer than last year and that single family building permits fell 10% in May. This represents the fifth straight decrease in permits this year. While building activity has reduced in pace in response to the slowdown, the supply still far exceeds the demand.

Many analysts ascribe this situation to generic causes such as the overeagerness of sellers resulting in a large attraction of potential buyers being excluded from the market. Other realtors blame increasingly stringent building codes and environmental guidelines for forcing prices higher. As the prices begin to come down, however, it appears that the sellers have more leeway in setting prices than they sometimes acknowledge.

Realtors on the Cape and Islands attribute the slowdown to more specific factors such as homebuyer hesitation because of the new Cape Cod Commission Act (CCCA) a regional land-use planning law soon to go into effect and negative publicity about the Cape's growing overdevelopment. The effect of the CCCA focuses on undeveloped land sales, and potential buyers are fearful of purchasing land that they cannot develop, or more likely, cannot develop to the extent that they wish.

The development slowdown will result in decreased environmental impacts, such as water pollution, and the rapid loss of open space which the recent boom in development has caused on the Cape and in the Bay area. It is also causing town officials, such as conservation commissions and planning boards, to be more critical of development proposals. They are becoming increasingly concerned about accepting proposals for development which are started but never finished because the funds dry up, leaving the town with a half-finished lot or a development unable to meet environmental standards. The slowdown may also provide some slack time to reevaluate and improve the local and regional land-use policies so that when the market eventually revives, towns around the bay will be ready to better manage it.

(The Falmouth Enterprise, 6/26/89; The Cape Cod Times, 7/11/89; The Providence Journal, 7/8/89; The Standard Times, 6/19/89, 7/16/89; The Bourne Courier, 6/28)

Dredging

The Army Corps of Engineers proposed a budget that would abandon 21 dredging projects in southeastern Massachusetts and end federal subsidies for dredging small harbors such as those found in Wareham and Cuttyhunk. The House Appropriations Committee rejected the proposal, however, and Representative Gerry Studds said, "harbormasters, selectmen, finance committees, and residents of small towns can breathe a sigh of relief because of the House Appropriations decision."

Critics of the plan argued that many of the small harbors would be forced to close because the communities couldn't afford to pay for the dredging which is now covered 100% by the federal government. Proposed by the Bush administration to save an estimated $49 million, the restriction could have affected 74 harbors across the country in 1990 and 500 more in future years.

Meanwhile, local officials on the Cape are considering purchase of a county dredge, available for harbors and channels of 15 Cape towns. By making this investment, the towns could get the periodic harbor dredging they need without the long and frustrating wait for state and

Lloyd Center Staff

federal funding. According to the Massachusetts Coastal Zone Management Office it could cost as much as $800,000 a year to buy and operate such a dredge.

Mattapoisett is proposing to send out bids to dredge the riverway between Snipatuit Pond and Snipatuit Road which is currently not passable even in a small canoe. Alewives Anonymous, Inc., a corporation founded for the protection and preservation of the herring rivers of the area, believes that the current condition impedes the passage of herring going upstream to spawn. A tri-town (Marion, Mattapoisett, and Rochester) herring rivers improvement account has accumulated $10,000 to fund part of the project which will cost an estimated $15,000. Alewives Anonymous, Inc. is able to fund the difference, but no decision has been reached yet.

(The Standard Times, 6/27/89; The Cape Cod Times, 5/1/89; The Bourne Courier, 5/17/89; The Presto Press, 6/21/89)

Open Space

Although Massachusetts spent $80 million--more than any other state--for open space last year, current fiscal problems in the Commonwealth threaten to cut similiar spending. In 1987, the state legislature authorized bonds totaling $500 million to purchase open space. Budget cuts, however, have made it impossible to finance such spending in the near future.

Lack of money may jeopardize the complete preservation of the Acushnet Sawmill property, the largest piece of land available for purchase along the coastal plain between Maine and Maryland. Together with the Freetown State Forest it forms almost 10,000 acres of uninterrupted forest.

The 3,800 acre parcel of wilderness will help protect Fall River's water supply since it includes part of the watershed of the Copicut Reservoir. Two years ago the Hawes family offered to sell the land (appraised at $18 million) to the state for a park. In July, Massachusetts managed to buy the 210-acre Freetown portion of the land for $754,400 before funds dried up. The state had hoped to buy the rest of the land in installments over the next few years.

In light of the state's current fiscal situation, Senator Thomas Norton suggested part of the property should be turned into a horse racetrack. Under his proposal, developers would buy up the entire acreage and donate all 1000 acres of the land to the state. There will be a non-binding referendum on the November ballot in Fall River asking voters to voice opinions on this proposal. The state, Fall River Mayor Carlton Viveiros, and concerned environmentalists remain wary of the proposal. Says Priscilla Chapman, Executive Director of the New England Chapter of the Sierra Club, "It is absolutely unacceptable. A racetrack is not a benign or pollution-free use of this land."

Many open space areas other than Acushnet Sawmill are threatened by development as the result of budget cuts. Sites include Ellisville Harbor in Plymouth, which if saved, would become the only state beach between Quincy and the Cape. Also at risk are many farms eligible for Agricultural Preservation Restriciton (APR), an open space program in which the state purchases the development rights of a farm. The lack of funding for APR could seriously impair the declining dairy farm industry in Massachusetts. On January 1, 1988, there were 540 dairy farms in Massachusetts; today, there are fewer than 460.

To counter the decline in state funds, local communities in Massachusetts have intensified efforts to preserve open space through local resources. Westport, for instance, recently created an Open Space Planning Committee which is creating an open space plan. (Marion and Dartmouth already have open space plans.) Westport is researching such open-space measures as cluster zoning. Randell Arendt, a land-use expert for the Center for a Rural Massachusetts who recently spoke in the town, believes conventional "large lot zoning only mandates suburban sprawl." Another widely discussed option is land banking. Under this system a tax is imposed on real estate sales which can be used for such purposes as buying open space or subsidizing affordable communities in the state that currently have approved land banking trusts. A similar request from Cape Cod communities was turned down by the state Senate in July in light of intense lobbying by real estate interests.

(The Standard Times, 3/9/89, 5/7/89, 6/14/89, 6/15/89, 7/6/89, 7/26/89, 7/19/89, 7/30/89; The Boston Globe, 6/28/89, 7/21/89; The Chronicle, 7/5/89, 5/31/89; The Enterprise, 6/30/89; The Sentinel, 6/28/89)

Oil Spills

Since April, four significant oil spills have blackened American waters resulting in beach closures, and shellfishing bans, as well as the deaths of hundreds of birds, fish and mammals. In total, over 12 million gallons of oil polluted the waters of Alaska, Rhode Island, Delaware and Texas. These catastrophes have encouraged new legislation and have heightened environmental awareness and involvement. One bill now in Congress proposed by Transportation Secretary Samuel Skinner provides for $500 million toward future oil spill clean up. For almost 11 years Congressman Gerry Studds, D-Mass has had a proposal in the House Committee on Merchant Marine. This bill would require that anyone responsible for a spill must also be responsible to clean it up. In addition a recent amendment holds the polluters accountable for damage to wildlife and natural resources. Oil companies have also proposed a plan to create a network of oil spill response teams to be located around U.S.

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Around the Bay

continued from previous page

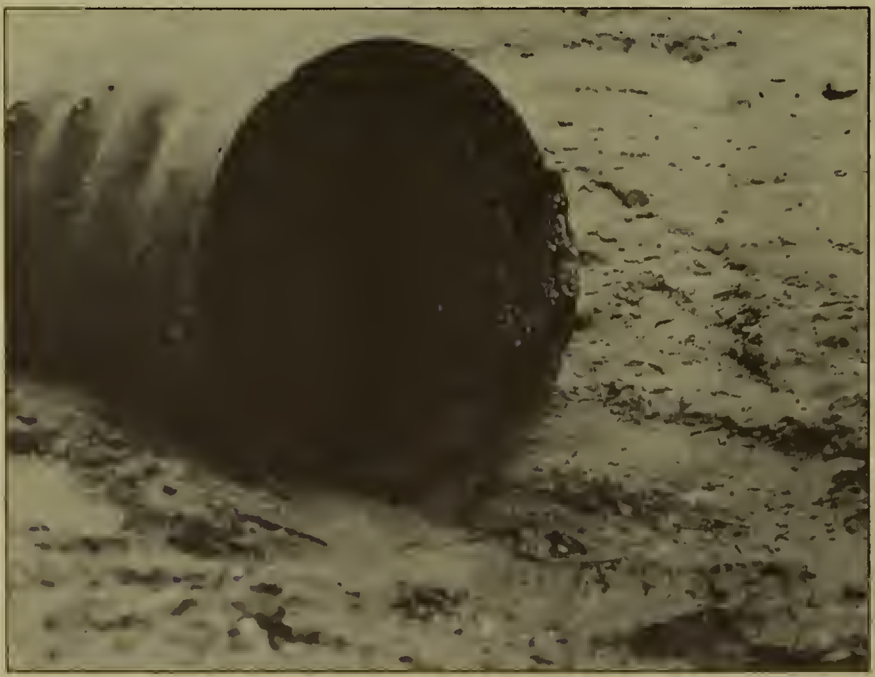
coastal waters. These teams would be commanded by the Coast Guard.

Though the amount of oil spilled in Alaska, Rhode Island, Delaware and Texas was especially large, such spills are not unusual. In the towns surrounding Buzzards Bay alone, eight oil or petroleum spills have been reported in the last six months:

April 1989	Mobil station in Barnstable leaks 3,000 gallons of gasoline
May 1989	200 gallons of waste oil from an unknown source found in New Bedford Harbor
June 1989	Eastham gas station leaks 11,000 gallons of gasoline and 4,000 gallons of heating oil
June 1989	Oil delivery truck spills between 300 and 350 gallons of oil in West Yarmouth
June 1989	Bourne Texaco station leaks 250 gallons of gasoline
June 1989	Approximately 200 gallons of oil from an unknown source wash up onto Chatham and Orleans beaches
June 1989	30-40 tar balls of crude oil found on Falmouth and other Buzzards Bay beaches
July 1989	Tanker truck spills 2 gallons of gasoline in Wareham

These spills, in addition to the other four large spills effect every aspect of the coastal environment. Oil travels through the entire food chain, onto public beaches and into shellfish traps. Gasoline prices rise as oil companies have spent over $300 million on clean up efforts, and the oil still may remain in the sediments. As Jacques and Jean Cousteau observed: "Taken individually, these events do not spell disaster. Taken together, they pose a formidable challenge to our current approach to contingency planning."

(The Cape Cod Times, 6/10/89, 6/21/89, 6/26/89, 6/27/89, 6/28/89, 6/29/89, 7/13/89, 7,26/89; The Standard Times, 5/12/89, 6/21/89, 6/26/89, 6/28/89, 7/4/89, 7/25/89; The Falmouth Enterprise, 6/28/89)



Lloyd Center Staff

Funding for Sewer Projects

Fairhaven

Over the past several years, water and sewerage problems on West Island have become increasingly worse. In the past year over 20 wells have failed, sparking criticism that West Island residents are living in a health hazard below acceptable standards of living. Many residents bring home gallons of water each day because they cannot drink, cook, bathe, or brush their teeth with their own well water.

Fairhaven voters recently were given a chance to remedy this situation. As part of the Proposition 2 1/2 override proposal, residents had the opportunity to vote in a new water treatment facility for $256,000, an new sewer system for $356,000, and also to have to have town water extended down several roads on West Island.

But, when the time came to vote, Fairhaven's citizens overwhelmingly chose not to override Proposition 2 1/2, thus killing the chances for the treatment plant and sewer.

(The Advocate, 5/17/89, 6/7/89)

Mattapoisett

Mattapoisett Water/Sewer Commissioner Charles A. Morgan recently announced that the cost for Mattapoisett's participation in the expansion of Fairhaven's sewer treatment plant will be $12,000 more than expected. In addition, the user fee to customers of the sewer service is also expected to rise bringing in additional monies to the $198,490 that was collected last year.

Water/Sewer Superintendent William T. Nicholson said that the Mattapoisett Water/Sewer department has four field employees, including himself, and one full-time secretary. Part of the overall increase will be used for wages and other department expenses.

(The Presto Press, 6/28/89)

Wareham

As of July 1, 1989, Wareham residents will pay 30 percent more in sewer fees as the town tries to alleviate a running deficit in the sewer plant account. Residential rates increased from $100 to $131 per annum; commercial user fees jumped from $1.12 to $1.47 per 100 cubic feet of wastewater.

Town Administrator Rande Wilson explained that the so-called "enterprise account" out of which Wareham's sewer treatment plant is funded, is supposed to be self-supporting and separate from the town's budget, which in turn, is bound by Proposition 2 1/2 tax limits. But, because of the Sewer Department's deficit, user fees need to be increased just to break even. Selectmen also raised the fee charged to companies that pump waste from cesspools and dump it at Wareham's treatment plant from $21 to $32 per 1000 gallons.

One Carver-to-Wareham septic waste hauler believes the new fees may put him out of business. He explained that the increases in the fee would have to be passed on to customers which, in turn, would make property owners less likely to maintain septic tanks regularly, resulting in more leaking systems.

(The Standard Times, 5/31/89; The Wareham Courier, 6/7/89)

Dartmouth & Marion

The town of Marion recently agreed to assist Dartmouth in its waste "crisis" by accepting a minimal amount of septic waste until the town can find a better solution. Marion Selectman Ted Pratt, Jr. told a Dartmouth Board of Health member that Marion will accept Dartmouth's waste on an "ad hoc" basis. Under the plan, Marion would accept one load of septic waste from Dartmouth per day, five days a week. A typical load can range anywhere from 1000 to 4000 gallons.

The reason for the Dartmouth/Marion agreement was that New Bedford, under orders from the Department of Environmental Quality Engineering, can no longer accept Dartmouth's sewage. Many had hoped that Dartmouth's own treatment facility would be able to take in the sewage that New Bedford could no longer take. But, Manuel Branco, Superintendent of the Dartmouth Department of Public Works, says that Dartmouth's treatment plant simply cannot process this extra waste. Branco explained that "if we accept septage to the plant at this time, we will be in direct violation of our permit," such a violation would result in a $10,000 per day fine.

(The Chronicle, 7/12/89)

Bourne

The Town of Bourne recently received a $1.5 million state grant to help pay for part of the $8.2 million project to provide sewers in sections of Buzzards Bay. The grant will be used to pay for sewers serving side streets off Main Street in Bourne. Rep. Thomas S. Cahir, D-Bourne, and Sen. Henri Rauschenbach, R-Brewster, were instrumental in convincing state officials to help fund the project. Cahir said he "was making (them) aware that we have been going through this thing for 15 years, and we really needed to do it." While the $1.5 million is still subject to legislative approval, Cahir believes the money will be forthcoming.

(The Cape Cod Times, 7/11/89)

Massachusetts Senator John Kerry Holds News Conference at Electric Avenue Beach in Bourne

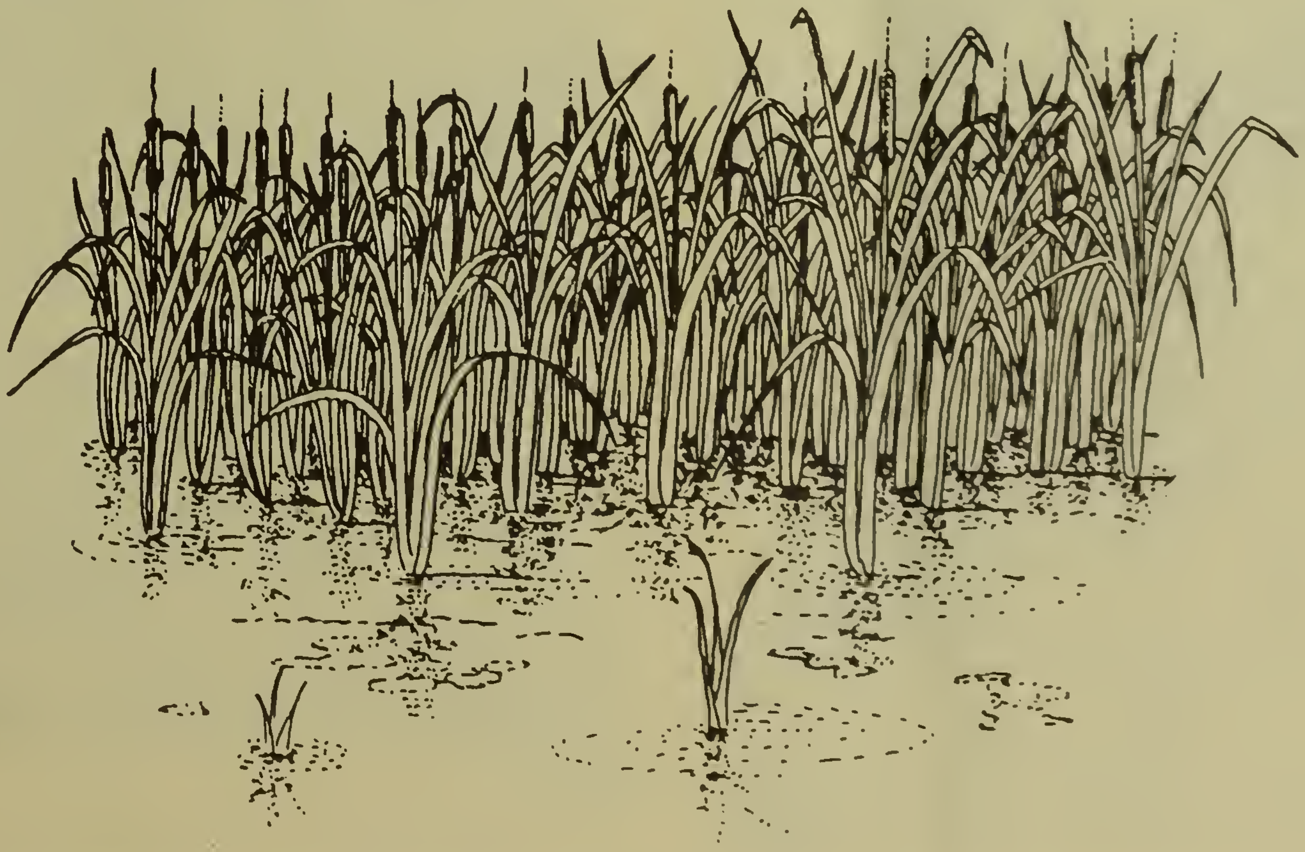
U.S. Senator John Kerry and actor Ted Danson, chairman of the American Oceans Campaign, held a news conference at Buzzards Bay's own Electric Avenue Beach in Bourne on Saturday, August 5.

The Senator Kerry came to Bourne to speak about legislation he has introduced to Congress that would help states better control coastal development. The bill called, "Coastal Zone Improvement Act of 1989" would substantially strengthen state's ability to manage coastal affairs. Kerry said, "Today the federal government can say we're going to have oil-drilling on Georges Bank even though Massachusetts may find it very injurious to Massachusetts. So we're going to strengthen the state's ability to say no."

Danson, otherwise known as the bartender "Sam" on the television sitcom, *Cheers,* accompanied Kerry to promote awareness of how people pollute the environment and how they can clean it up.

Electric Avenue is the site where stormwater treatment systems were installed in July. Since that time, contamination flowing into Buttermilk Bay has been reduced by 20 percent. "Bravo to you," Mr. Danson said. "I hope this can be an example of what can happen when people are angry and upset and decide to do something."

(The Standard Times, 8/6/89)



Management Committee Summer Update

by Meghan O'Connor, Newsletter Staff

Over the summer, the Management Committee of the Buzzards Bay Project met monthly to discuss the current status, new initiatives and future direction of Project activities.

June 1, 1989

The first meeting of the summer included discussions about demonstration projects, the development of the management plan, public outreach activities, research reports, and the minigrant program. As the Project nears its end, Management Committee members agreed that one objective vital to the successful continuation of protection of the Bay is thoughtful long-range planning for "life after the Project."

According to Bob Morehouse, U.S. Environmental Protection Agency, the stormwater drain projects in Bourne and Wareham are progressing on schedule. Bourne's project involves controlling direct stormwater discharge into the Bay through the installation and use of a series of leaching tanks and filters on-line of a storm drainage system. Two wells, which will be monitored, have been installed. In Wareham, the system will consist of a storm/sewer interception structure, a pipeline and a detention-recharge basin. The infiltration basin site needs an archaeological survey before any digging can be done since it used to be an Indian camp ground. Once this is done, a transfer of land rights to the town will be necessary. Construction for the Wareham site should be complete by the end of July.

The Comprehensive Conservation and Management Plan (CCMP) update included discussion of a step-by-step checklist of management recommendations using the Buttermilk Bay study as a generic model.

The Technical Advisory Committee (TAC) reported that there are about 90 people on the mailing list for the synthesis data reports. Concern was expressed over the delay of certain Buzzards Bay Project technical reports being written by DEQE. The state agency is under financial restraints and is lacking the funding and staff necessary to complete them; the parties involved will negotiate a solution.

The Buzzards Bay Advisory Committee (BBAC) submitted a listing of all mini-grants reviewed and proposed for funding. The Management Committee approved the funding of those proposals recommended. A ceremony involving state and local officials and the media for awarding the grants to recipients was discussed. The BBAC will serve as host for this ceremony.

Ted Pratt, Chairman of the BBAC, also brought up in discussion the problem of the state's inability to deal with alternative technologies. Mr. Pratt contended that it is necessary to create under the current structure an office of New Technologies and draft legislation that will meet town's needs. The discussion was tabled until more information can be reviewed by Committee members.

The Coalition for Buzzards Bay announced two public outreach events sponsored by the Coalition: an Illegal Variance Workshop and a beach party intended to inform residents in a casual setting about the demonstration projects located in their towns.

The Lloyd Center for Environmental Studies reported that production of brochures for the upcoming Issues Workshops is complete. Other accomplishments included the completion of the Buzzards Bay Slide Show (long and short forms) and the first in a series of fact sheets of Buzzards Bay Project issues. Responding to the common concern of the Committee about the future of the initiatives started by the Project, Dr. Alan Lee Hankin, Executive Director of the Lloyd Center, proposed that additional moneys be appropriated for the next fiscal year in order to hire a Technical Assistant (Journeyman). This person would be available to respond to the issues or problems in the towns bordering Buzzards Bay.

July 6, 1989

July's meeting took place in Marion Town Hall following the Buzzards Bay Project Awards Ceremony of Community Grants. Mr. Morehouse reported that the stormwater treatment system in Bourne has been constructed. Although the construction and labor costs starting from scratch could cost towns an estimated quarter of a million dollars, Mr. Morehouse said that all towns around the bay could assemble a similar system less expensively by retro-fitting existing systems. It was suggested by committee members that a cost analysis summary be written comparing the two types of systems so that towns can decide on which system could most effectively solve town-specific stormwater problems.

The next report came from the Technical Advisory Committee (TAC). An extra $130,000 from FY88-89 is available in research and monitoring funds, so a Request for Proposal is being developed to address nutrient loading in the Bay. This research would spend $70,000 of the total $130,000. A concern was voiced over allotting the majority of the money on nutrient loading and leaving very little for toxic research. Also, the TAC was cautioned to include quality assurance with other labs in nutrient analyses.

The CCMP update included a general report on the Issues Workshops, which will serve a major role in the writing of the CCMP. Several issues were discussed concerning the tone and general outline of the plan. Ted Pratt, chairman of the BBAC said, "The management plan must ensure that local officials understand the cost and benefits of cleanup actions. We must give them criteria to make judgments on." Also, to encourage regionalism, it was suggested that the CCMP be problem-solving specific and not geographic specific.

The final topic of discussion concerned the response to oil spills around the region. Buzzards Bay and Mt. Hope Bay are the most susceptible waters to oil spills in Massachusetts. There are currently no contigency plans. No registration of tankers through the Cape Cod Canal is required. Booms don't work on water moving at a rate over one knot; the Cape Cod Canal has water that flows up to seven knots. Clean-up of oil spills in near coastal water are conducted under the supervision of the Coast Guard. The Coast Guard has expressed their willingness to work with federal and state authorities to establish contigency plans.

Land Protection Strategies are the Focus in Meeting of New England Coastal Campaign

by Meghan O'Connor, Newsletter Staff

The Land Protection Committee of the New England Coastal Campaign met in Newburyport, Massachusetts on Saturday, June 17 to target specific congressional acts of legislation that can be strengthened or changed to ensure adequate protection of New England's coastal resources.

The Land Protection Committee is one of two groups within the New England Coastal Campaign that is working to fight coastal problems at the national level. Since development of coastal property is a leading cause of water quality decline, the Land Protection group will focus on legislation governing land use and acquisition. Opposing interests of realtors and developers make the battle tough, but the Land Protection Committee contends that acquiring development rights to scenic easements and the creation of private land trusts will allow major critical areas may be protected from adverse uses.

Specifically, amendments to the Clean Water Act, Coastal Barriers Resource Act, American Heritage Trust (land acquisition), National Flood Insurance and reauthorization of the Coastal Zone Management Act were agreed as the major pieces of legislation that could be targeted for change. For example, regulatory programs could be established that direct development towards existing developed land. Current laws are weak or lacking in impetus to do this. Also, they do not adequately define critical areas and "net loss of wetlands" nor eliminate the flood insurance program, an added incentive for coastal development. In general, the Land Protection group is looking for broad enough federal direction in these areas so that state and local levels will be covered by coastal protection regulations.

The second group within the New England Coastal Campaign is Coastal Law and Order, which will emphasize the necessary counterpart of regulatory legislation: enforcement. It is too often the case that good laws on the books are clearly violated. For this reason the Coastal Law and Order group is working to target particular "worst case" offenders and encourage that compliance with existing statutes are carried out to the full extent of the law. Both groups are meeting separately to work out their respective platforms. Once the proposed legislation is developed, the Land Protection campaign will meet with congressional delegations in their home districts to discuss existing federal policy and the campaign's platform. Coastal Law and Order representatives will meet with the U.S. Environmental Protection Agency Region 1 Administrator to do the same.

Solar Aquatics

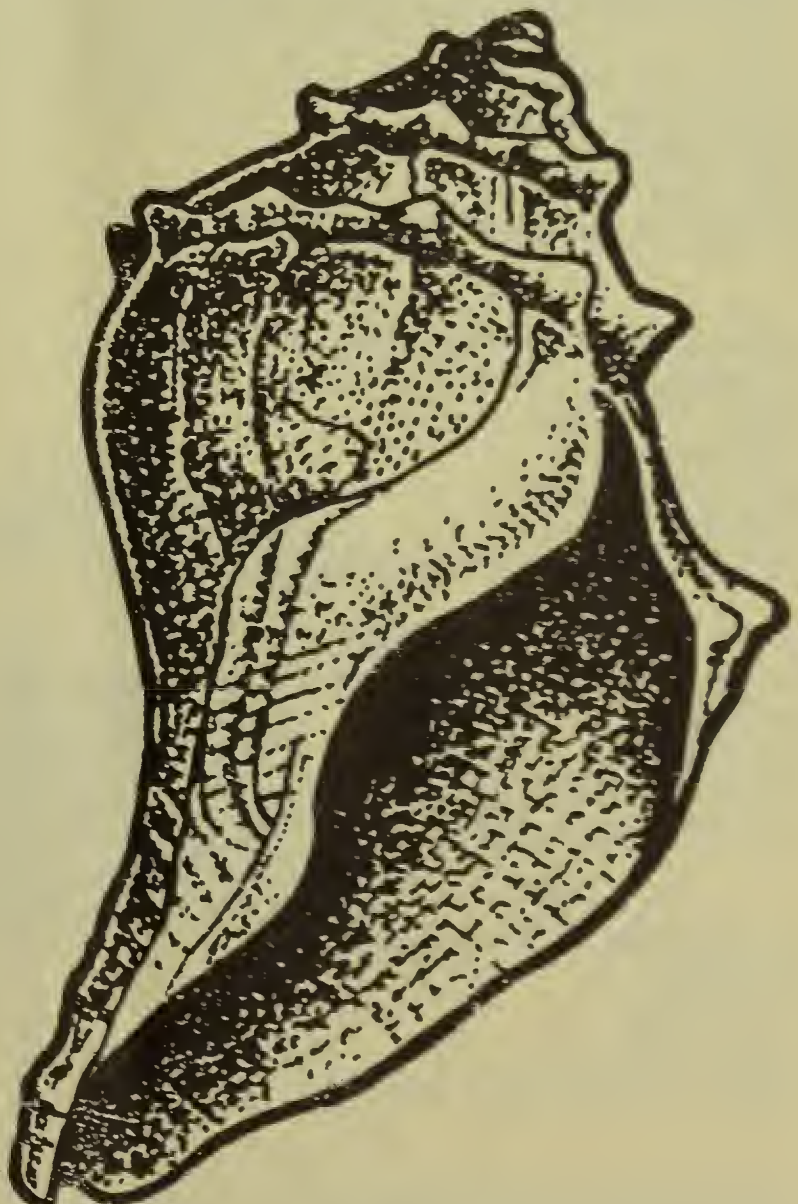
continued from page 3

Located in Falmouth, MA, Ocean Arks International was founded by John Todd in 1982 as a not-for profit research organization involved with developing new concepts in appropriate and ecologically sustainable technology. Ecological Engineering Associated of Falmouth and Woods Hole, was founded late in 1988 to implement and market the SAS technology. It is Ecological Engineering Associated which owns and runs the SAS technology and facilities and pays royalties to Ocean Arks International. Inquiries about SAS should be directed to:

Ecological Engineering Associated
One Locust Street
Falmouth, MA 02540

or

P.O. Box 436
Woods Hole, MA 02543
(508)457-0600



Directory of Environmental Organizations in Buzzards Bay

by Anita Golton, Scott MacKinnon, and
Fred Mock, Newsletter Staff

A primary goal of the public education program of the Buzzards Bay Project is to provide information and resources to communities in the region. In upcoming newsletters the Lloyd Center will publish a town by town list of area organizations involved with some aspect of environmental concern. In this issue are the towns of Marion, Mattapoisett and Rochester. If you know of any group or organization that might qualify for, and wish to be considered for this listing please contact the Lloyd Center for Environmental Studies at (508)990-0505.

MARION

The EPA Buzzards Bay Project
Regional Offices
c/o CZM
2 Spring Street
Marion, MA 02738
(508) 748-3600
Contact: Joe Costa

Friends of Bird Island
2 Spring Street
Marion, MA 02738
Contact: Barbara Burr, (508) 748-2194

Marion Marine Water Quality Sub-Committee
c/o Marion Conservation Commission
Marion Town Hall
2 Spring Street
Marion, MA 02738
(508) 748-2500
Contact: Georgia McDonald-Chairperson

League of Women Voters of Marion, Mattapoisett, and Rochester
P.O. Box 812
Marion, MA 02738
Attention: Lois Sager

Marion Natural History Museum
8 Spring St.
P.O. Box 644
Marion, MA 02738
Contact: Mary Wardle - Secretary

Marion Open Space/Landbank Study Committee
c/o Olive Harris-Chairperson
Marion Town Hall
2 Spring Street
Marion, MA 02738
(508) 748-2500

Marion Recycling Committee
c/o Olive Harris-Chairperson
Marion Town Hall
Marion, MA 02738
(508) 748-2500

Marion Waterman's Association (Shellfishermen)
c/o Karl Drake- Secretary/Treasurer
P.O. Box 778
Marion, MA 02738

MCZM (Massachusetts Coastal Zone Management)
Southeast Regional Office
2 Spring St.
Marion, MA 02738
(508) 748-3600
Contact: Susan Moor-Coordinator

Sippican Lands Trust
589 Mill St.
Marion, MA 02738
(508) 748-2809
contact: Katrina Saltonstall

Sippican Chapter of Ducks Unlimited
15 Puckerbrush Way
Marion, MA 02738
(508) 747-1475
Contact: Scott Cowell-Chairman

Tri-Town River and Herring Committee
C/O Homer Robinson-Chairman
P.O. Box 638
Marion, MA 02738

MATTAPOISETT

Mattapoisett Growth (Management Study) Committee
35 Driscoll Lane
Mattapoisett, MA 02739
Contact: Mr. Peter Kortright,Chairman

The Mattapoisett Land Trust, Inc.
60 Marion Rd.
P.O. Box 31
Mattapoisett, MA 02739
Contact: Martha Peterson

ISSUES WORKSHOPS

A Series of Workshops Designed to Develop Issue-Specific Goals for Buzzards Bay

The Buzzards Bay Project is in the process of drafting the Comprehensive Conservation and Management Plan (CCMP) for the Bay. We want your input! The implementation of the recommendations of the Plan will take place mostly at the local level, now is the time to help create those recommendations. Join us for one, or for all three of the remaining workshops. We look forward to incorporating your thoughts into the CCMP.

Shellfish Protection
Saturday, September 16, 1989,
9:00 am - 3:30 pm

*shellfish bed closure system
*managing sources of contamination
*impact of marinas on shellfish bed closures
*use of fecal coliform as the indicator species
*shellfish depuration alternatives

Location: Tabor Academy, Marion

Toxics and Hazardous Wastes
Saturday, September 30, 1989
9:00 am - 3:30 pm

*seafood safety
*oil spills and clean-ups
*dredging in contaminated waters
*controlled use of hazardous chemicals

Location: Tabor Academy, Marion

Sewage Treatment Options
Saturday, October 14, 1989
9:00 am - 3:30 pm

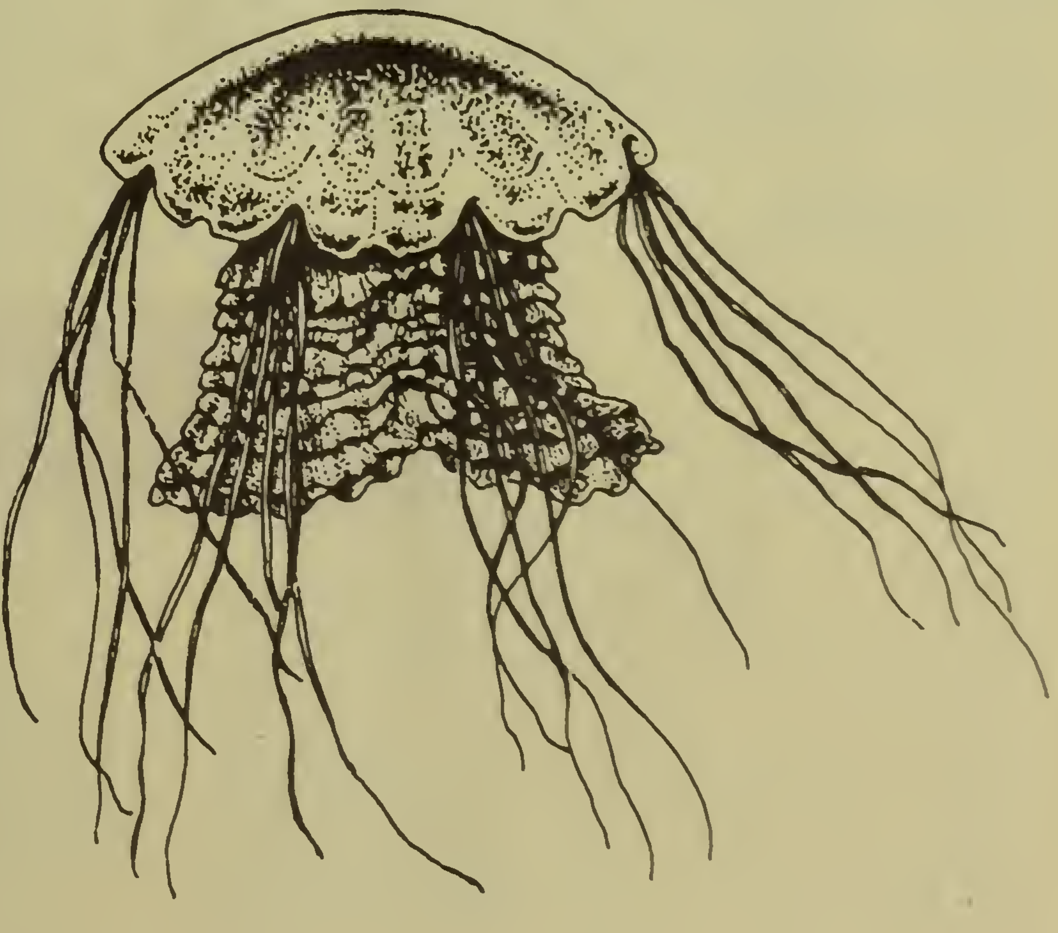
*individual sewage options
*septage and sludge management
*private wastewater treatment plants
*limitations of Massachusetts Title V Program
*the balance between land and water
*disposal of wastewater

Location: Clark 5, Quisett Campus, Woods Hole Oceanographic Institution, Woods Hole

Mattapoisett River Valley Water Supply Protection
Advisory Committee
Contact: for info. Nick Nicholson,
Water Department at 758-3551

ROCHESTER

Alewives Anonymous Inc.
P.O. Box 42
Rochester, MA 02770
(508) 763-2019
Contact: William D. Watling-President



The Buzzards Bay Project Newsletter is Produced by The Lloyd Center for Environmental Studies:

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Ideas for articles or photographs for The Buzzards Bay Project Newsletter should be submitted to Barbara Sego, Lloyd Center. The deadline for the next issue is October 27, 1989.

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The Buzzards Bay Project
NEWSLETTER

VOLUME FOUR WINTER 1989 NUMBER FOUR

S.O.S., Save Our Seas

Volunteers at Work

by Barbara Sego, Editor

SOS is the traditional, nautical call of distress, an emergency. A local group has adopted that moniker to call attention to the deteriorating state of our near shore waters. Save Our Seas (SOS) is a group of Marion and Mattapoisett citizens that has formed to sound an alarm about the state of our coastal waters and to take action to clean them up. They have allied themselves with the Town of Marion and are a subcommittee of the Conservation Commission.

SOS started over a year ago when a few concerned citizens approached the Marion Conservation Commission and asked what could be done to improve the water quality of Aucoot Cove. Conservation Commissioner John Rockwell suggested that they organize a group that could check the water quality in the area, and find out what was causing the problem so that an attempt could be made to stop the pollution. Led by area resident Georgia McDonald, the citizens did just that. They formed SOS and began fundraising to finance their plans to study the water quality of Aucoot Cove. Residents of Aucoot Cove, the area the group is centered around, donated approximately $4,000 towards testing the Cove for coliform contamination. SOS has used this money to test the water of the Cove to see where the bacterial contamination is highest and where it is coming from.

SOS is an all volunteer organization working together to collect the water samples needed to identify pollution trouble spots in the Cove. They are using the money they have raised to pay for the testing of the water. SOS volunteers have learned a great deal about the various forms of bacterial contamination and its sources in the past year. They collect the water samples, in both wet and dry conditions, drive to the laboratory, record the weather and count birds. They count the waterfowl in Aucoot Cove once a week to get an idea of how many use the Cove. Some people think the high numbers of waterfowl observed in the Cove could be a major source of contamination. However, testing done earlier this year by SOS indicates otherwise. Most of the coliform found in Aucoot Cove is coming from human sources. They can tell this

continued on page 17

Management of Sanitary Wastes in Buzzards Bay

FY89 Demonstration Project

by Barbara Sego, Editor

Sanitary waste treatment and disposal has become a growing concern in Buzzards Bay especially as a pubic health issue. Recent increases in the number of acres of shellfish beds closed due to high coliform counts is but one example of the extensive contamination caused by sanitary waste. In the past two years some swimming beaches have also been closed because of the health risk high fecal coliform counts cause. Coliforms is a term used for a group of bacteria that are found in the intestines of humans and other warm-blooded animals. Their presence in our waters indicates that sewage is also present. Coliform bacteria themselves may not be harmful, but they serve as an indicator of possible contamination by other disease causing pathogens, both bacteria and viruses. The Buzzards Bay Project has identified pathogen contamination as one of its primary concerns in its attempts to improve the long-term water quality of Buzzards Bay.

The Buzzards Bay Project has conducted studies that indicate a number of sources of pathogen contamination:

continued on page 5

IN THIS ISSUE:

The MA Wetlands Protection Act.................2
FY89 Workplan and Budget Set!...................4
Nonpoint Demonstration Project..................6
Issues Workshop Overview........................7
Calendar..8
Around the Bay..................................10
TAC Fall Update.................................16

The Massachusetts Wetlands Protection Act

by Fred Mock, Newsletter Staff

In 1963 Massachusetts became the first state in the nation to protect wetlands. The so-called Jones Act forbade "the filling, dredging, or removal of coastal wetlands" absent a permit from the Department of Natural Resources. In 1965 the Hatch Act, protecting inland wetlands, was passed. By 1972, the two laws were combined into the present-day Wetlands Protection Act (WPA). ("Protecting Massachusetts Wetlands," 12 Suffolk U.L. Rev., p. 757.) The WPA has had several amendments made to it and has been the subject of much litigation since 1972, but it is still the governing statute on wetlands protection in Massachusetts.

The WPA recognizes seven basic values or interests: "flood control, prevention of pollution, prevention of storm damage, protection of the public and private drinking water supply, protection of the groundwater supply, protection of fisheries, and protection of land containing shellfish." (Ibid., pp. 757-8.)

Wetlands are "areas where groundwater is at or near the surface of the ground for enough of every year to produce a wetland plant community." Marshes, swamps, and bogs are among the more typical wetland areas. ("Wetlands and Floodplain Protection," 64 Mass. L. Rev., p. 73.) The jurisdictional reach of the WPA is the "100-year flood," "a statistical estimate of the reach of a serious flood, one which on the average is so serious as to occur only once in 100 years." (Ibid.)

In general, any time someone wants to do work which will somehow alter a wetland area, whether by filling, dredging, or removing part of that wetland, that person will need to receive a permit. This permit is known as an Order of Conditions. The types of wetlands included in the act are banks, freshwater wetlands, coastal wetlands, beaches, dunes, flats, marshes, meadows and swamps bordering on certain bodies of water. The bodies of water covered by the statute are the ocean, estuaries, creeks, rivers, streams, ponds, or lakes. (Ibid., p. 76.) Also included are floodplains, lands susceptible to flooding from any source.

The WPA does not necessarily prohibit work in a given wetland area. Instead, written application to a towns local conservation commission is required. The application must be sent in by certified mail, using a Notice of Intent (NOI) form required by the Department of Environmental Quality Engineering (DEQE) (now the Department of Environmental Protection [DEP]). Along with the application form, there must be "plans sufficient to describe the activity and its effect on the environment, plus an Environmental Data form," containing "minimum adequate content of plans." (Ibid., pp. 76-7.) The application must be filed not only with a particular towns conservation office, but also with the appropriate DEQE Regional Office.

Within 21 days of receiving an application, the local conservation commission must conduct a public hearing which will consider the proposed work in the wetland area. Then, within 21 days of the close of the hearing, the commission must issue its decision in a form which is known as the Order of Conditions. "If after said hearing the conservation commission... determine[s] that the area on which the proposed work is to be done is significant to public or private water supply, to the groundwater supply, to flood control, to storm damage prevention, to prevention of pollution, to protection of land containing shellfish, to the protection of wildlife habitat or to the protection of fisheries," (Mass. G.L. C. 131, Sec. 40, Para. 12), then the commission can mandate conditions which will act as restrictions on the work being done in a wetland area.

One of the interests that a local conservation commission is to take into account is the protection of wildlife habitats. This has not always been the case, however, as this clause was added in a 1986 Amendment to the WPA. The Act defines wildlife habitat as "those areas subject to this section which, due to their plant community composition and structure, hydrologic regime or other characteristics, provide important food, shelter, migratory or overwintering areas, or breeding areas for wildlife." (Mass. G.L. C. 131, Sec. 40, Para. 13.) The Wildlife Amendment is a very significant and important addition to the WPA. Many areas that in the past would not have been subject to the provisions of the Act now are included because of the belief that protecting wildlife is as important as saving things such as groundwater supplies.

No work can take place in a wetlands area until the Order of Conditions is recorded in the appropriate registry of deeds or land court and until the 10-day period for appeal to DEP has elapsed. However, if an appeal to DEP is filed, then work will be postponed until the appeal is heard. ("Wetlands and Floodplain Protection," p. 77.) More recent DEP regulations require that an appeal be accompanied by a detailed statement of reasons. In the past, requests for appeals could be filed without specific reasons. ("An Analysis of the DEQE Regulations Implementing the Massachusetts Wetlands Protection Act," Gregor I. McGregor, 70 Mass. L. Rev. 67 (1985).

An appeal can be filed by the original applicant, any "aggrieved person," any owner of land abutting land where work may be done, or any ten residents of a city or town where the land is located. Appeals are considered de novo, meaning that DEP technically does not take into account the decision of the local conservation commission, but rather "considers all matters afresh." However, DEP "does have an interest in the data and reasoning behind the local conservation commission decision." ("Wetlands and Floodplain Protection," p. 77.)

DEP will conduct an onsite inspection of the wetland in question, and, if the case is contested, DEP will hold an informal meeting of the parties. The local conservation commission is automatically a party to any such meeting. After this procedure, DEP will then issue a Superseding Order of Conditions within 70 days of the filing of the appeal. After the issuance of the Superseding Order, any party to the proceeding may ask for a formal hearing to be held. The request must be in writing and within ten days of the issuance of the Superseding Order. (Ibid.)

The local commission or DEP can disapprove a project altogether if either feels that ordering conditions would not prove helpful. However, when a project is approved but with conditions, the "[t]ypical requirements include limits on increasing downstream flooding, compensation for flood storage loss, erosion control, siltation treatment, unrestricted flow of the tide, shellfish relocation . . . , catch basin systems with grease and oil traps, periodic testing

Freshwater wetlands.

and reports, and possibly restoration work to cure problems already caused in construction." (Ibid.)

As one might anticipate, the Wetlands Protection Act has been the subject of a fair amount of litigation, as people have resorted to the courts when dissatisfied with the decisions of conservation commissions and the DEP. In addition, theMassachusetts Constitution contains the "Home-Rule" Amendment, meaning each city or town can adopt local Bylaws in furtherance of state laws like the WPA. Such Bylaws are legal so long as they do not conflict with Massachusetts or federal law. This has meant that Commonwealth courts are not only interpreting the WPA but the local Bylaws of cities and towns as well.

"The basic issue evident in most of the recent Massachusetts cases is one of taking: the amount of environmental regulation of private property without compensation that is permissible under the state and federal constitutions." (Alexandra D. Dawson, "Massachusetts Wetlands and Floodplains Revisited," 4 Western New Eng. L. Rev. 623 (1982), pp. 627-8.) Basically, Massachusetts courts have applied a balancing act when deciding wetlands issues. The regulations which protect against public hazards are weighed against the landowners burden. Subaru of New England, Inc. v. Board of Appeals, 395 N.E.2d 880 (1979), was a case involving a town which denied Subaru of New England, Inc. a special permit to place fill along the Neponset River. The decision was made on the basis that the fill would have caused a loss of fifteen acre feet of floodwater storage capacity. The trial court ruled that the effect of the fill would be minimal and that the town had "acted unreasonably and arbitrarily" by denying Subaru a permit. (Ibid., p. 628.)

The Court of Appeals overruled the trial court, however, saying that "as reasonable persons could differ as to the severity of danger from flooding . . . the boards decision was not arbitrary and must prevail." The court was thus unwilling "to substitute its opinion for that of the boards." (Ibid.) This decision indicates that local towns will be granted significant power, not only in their decisions related to granting permits, but also in the Bylaws which they adopt.

Several towns in the Buzzards Bay region have local Bylaws on wetlands protection which give even greater protection to wetland areas than the WPA does by itself. The Town of Falmouth, for example, has very extensive wetlands regulations, numbering over 45 pages. The WPA itself says very little about what can and cannot be done within the Buffer Zone (within 100 feet of a wetland resource). Falmouth's Wetland Regulations, however, go into extensive detail in this area. One specific provision deals with the preservation of a "buffer strip" within the Buffer Zone: "A continuous buffer strip, untouched and in its natural state, shall be left between development activities and the Resource Area to be protected. A thick, brushy strip, composed of natural, woody perennial vegetation along the wetlands edge has value for wildlife, prevention of pollution, physical protection of the adjacent wetland area, maintenance of water quality, and aesthetics." The typical minimum width of such a strip is to be 25 feet. The basic goal of Falmouth's Conservation Commission is to permit no work in this buffer strip. (Falmouth Wetlands Regulations, 10.12(2).)

The Wetlands Bylaws for the Town of Dartmouth defines the term "alter," something not seen in the WPA. Included among the various activities that are considered alterations of wetland resources are the changing of pre-existing drainage characteristics, flushing characteristics, salinity distribution, sedimentation patterns, flow patterns, or flood retention characteristics; also included as an alteration is the destruction of plant life including cutting of trees, and the changing of water temperature, biochemical oxygen demand, or other physical or chemical characteristics of water. (Dartmouth Wetlands Bylaws, Section 9.)

The Wetlands Protection Act can be an effective tool in the battle against overdevelopment. And, through the Home Rule Amendment, local citizens can create even more effective restrictions. Because of the different needs and attitudes of the many Massachusetts towns, however, home rule creates many inconsistencies. A few towns, such as Falmouth, have many complex regulations, whereas other towns have nothing whatsoever. For the WPA to be truly effective, this problem needs a solution.

Fiscal Year 1989 Workplan and Budget Set!

by Barbara Sego, Editor

The Buzzards Bay Project Workplan and Budget for Fiscal Year 1989 (September 1989 - September 1990) was approved by the Management Committee at the March 1989 meeting. The FY89 Workplan lists the steps necessary to meet the goal of developing recommendations for regional water quality management based on sound technical information, to define the regulatory and management structure necessary to implement recommendations and to educate and involve the public in formulating and implementing the recommendations. These steps are necessary components to the development of the Comprehensive Conservation and Management Plan (CCMP), the final product of the Project due to be completed in the Spring of 1990.

The Workplan is organized in accordance with the seven purposes of the 1987 Amendments to the Clean Water Act which the Buzzards Bay Project is required to fulfill. There are ten activities which the Project will fund in FY89 to meet the purposes listed in the Clean Water Act. Work on many of these items was begun in 1988 and will continue into 1989.

The first two purposes listed under the Amendments to the Clean Water Act, "Assess the Status and Trends in Water Quality"and "Identify Probable Causes of Environmental Problems", are addressed by the Buzzards Bay Project through a data management system. For FY89, a data management system will be developed with archival/retrieval capability of Buzzards Bay Project and other data. Other data will be added to the system as appropriate, and the system will serve as a liaison with other ARC-INFO systems. In 1988 key data sets were prioritized and a digital map was produced which resides in the State's and EPA Region I's databases. The FY89 funds will continue the efforts from FY88 and will also support a full-time data specialist for the Project.

The third purpose of the Clean Water Act, "Relationship Between Pollutant Sources and Impacts on Resources", is addressed through a stormwater remediation project and a harbor management project. The stormwater remediation project will undertake community level projects that will serve to mitigate the impact of stormwater runoff on the resources and/or water quality of Buzzards Bay. The harbor management project will undertake various community level projects designed to balance natural resource preservation and other water-dependent activities with non-water dependent development activities.

The fourth purpose is to "Develop Comprehensive Conservation and Management Plan". The Project is working towards this goal through a variety of activities. Since the beginning of the Project, public education has been a top concern. For FY89 the Project will continue to support the production of the quarterly newsletter; the arrangements for four workshops; the preparation and dissemination of fact sheets; the arrangements for media publicity; the dissemination of CCMP recommendations and project results. The Project will also continue the Community Minigrant Program. Through this program grants will be awarded to projects devised by local communities which serve to: 1) enhance resource protection or mitigation; 2) ensure local consistency and a strong information exchange network; and 3) to pass on useful technical material and management strategies. For FY89 the Project will also conduct municipal assessments. These assessments will be town by town and will determine the key environmental problems and town specific bylaw development needs in order to include these items in the CCMP. The Project has also allocated funds for the publication and dissemination of the CCMP, proposed action plans and project reports (including synthesis reports). The Project will also continue to fund a Project Coordinator, a Technical Assistance Specialist, a CCMP writer and clerical support for the Marion office of the Project (located within the Coastal Zone Management Office).

The fifth purpose, "Develop Coordinated Plans for Implementation of the CCMP", will be, in large part, included within the CCMP itself. For FY89 the Project is funding a program to look at potential funding sources. A financial plan for implementing the CCMP recommendations will be developed which will be an inventory of existing and potential funding sources available to local communities.

The sixth purpose of the Project is to "Monitor Effectiveness of Actions". For FY89, this will include the continuation of abaseline monitoring program to assess long-term trends in water quality and resource assessment. Included in this is the development of a more detailed and analytical monitoring program to assess causal relationships between observed changes, and the continuation of an integrative and interpretive research and monitoring program to improve our predictive capabilities of factors governing resource impacts. Also to be funded is the successful research minigrant program. In order to increase public awareness and obtain valuable technical information, funds will be provided for the development and implementation of a citizens' monitoring project.

The seventh purpose is the "Review Federal Financial Assistance Programs for Consistency". Relevant Federal and State programs will be reviewed to determine whether such programs are consistent with, and further the purposes and objectives of, the CCMP. These tasks were funded in FY88 and will continue through FY89 no additional funds will be required. Reports on this work will be completed in the Fall of 1989.

Funding for the Buzzards Bay Project comes from three sources, the Federal and State Governments and from a match by all grant or contract recipients. Through Section 320 of the Clean Water Act, the US Environmental Protection Agency has awarded the Project $550,000 for FY89. The State is required to provide a 25% match of these funds for the Project to be implemented. The State match of $185,000 brings the FY89 budget to $735,000. Funds from the State are provided through the Executive Office of Environmental Affairs.

Management of Sanitary Wastes...

continued from page 1

septic systems, stormwater run-off, sanitary waste discharges from marine craft, municipal wastewater discharges, waterfowl and wildlife. For fiscal year 1989 the Buzzards Bay Project will conduct a Demonstration Project that will address two of these sources, septic systems and discharges from marine craft, and will also address the final disposal of these wastes. The purpose of this plan is to demonstrate to the local communities of Buzzards Bay that sanitary wastes from septic systems and boats can be efficiently and effectively managed in order to reduce pathogen contamination in coastal waters. Another purpose of the project is to change homeowners' and boaters' attitudes towards disposal practices for septage and boat and marina wastes.

In order to meet these goals the Buzzards Bay Project has identified five tasks to develop an integrated program to examine the regulatory framework governing both septic systems and marine pumpout; to educate the public on the proper disposal and maintenance of both types of wastes; and to demonstrate the feasibility of managing the proper collection and disposal of these wastes by a local community. These tasks are: 1) to develop and implement model supplements to Title V; 2) to educate the public through written pamphlets, workshops, etc.; 3) to reduce the release of sanitary wastes from boats and marinas by developing a program to support the installation and use of pump-out facilities; 4) to develop a septage management plan for a local community; and 5) to treat septage and boat wastes to advanced wastewater treatment standards using innovative technology.

The Barnstable County Health and Environmental Department will coordinate the development and implementation of the model supplements to Title V with local Boards of Health. Examples of such supplements will include guidelines for the evaluation of variances, definitions, design flow requirements, recommended lateral setbacks, vertical distance to groundwater and other policies. The final supplements, after review, will be compiled into a comprehensive manual and distributed to each Buzzards Bay community as well as to communities in Barnstable County.

Local marinas in Buzzards Bay will be surveyed with the assistance of the Coastal Zone Management (CZM) Southeast Regional Coordinator to locate an existing pump-out facility that is underutilized and resource areas impacted . After identifying these sites, Project and CZM staff will work with the marina owner and local community to develop a plan for increasing the use of the facility. A review of state and local regulations will also be undertaken and will make recommendations as to how to improve the use of pump-out facilities. Water samples will be taken before and after the new plan goes into effect to document changes in water quality.

The Coalition for Buzzards Bay will begin a public education campaign to work with homeowners, the boating community and local officials in the Buzzards Bay region. The outreach plan's goals are to: 1) educate homeowners on the proper operation and maintenance of septic systems; and 2) encourage recreational boaters to use pump-out facilities. Brochures and workshops will be used to increase the public's understanding of both problems.

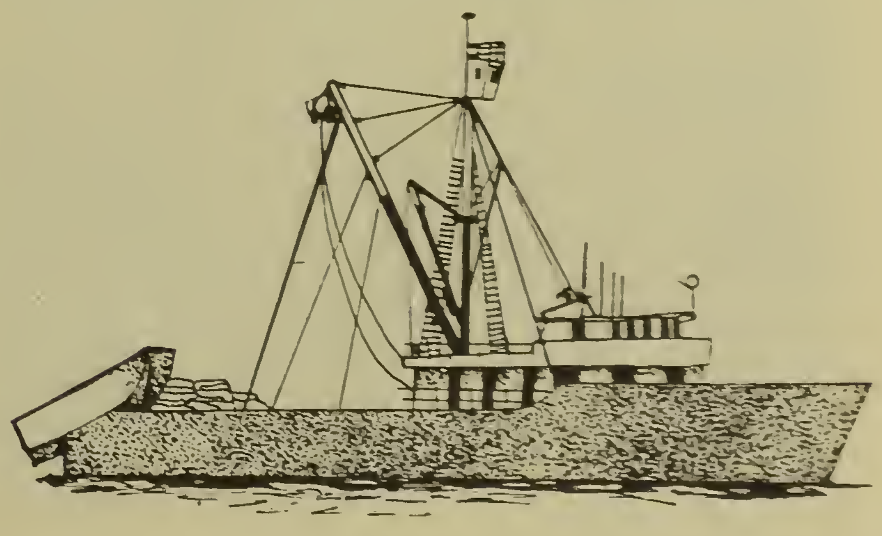
The Southeast Regional Planning and Economic Development District (SRPEDD) will develop a regional septage management plan to address the disposal and handling of septage waste. Management considerations include: management of the septic system; management of septage pumping and hauling; monitoring the quality and quantity of incoming septage; facility operations and maintenance; and financial arrangements for handling the septage.

In an effort to seek new solutions to age old problems, Ocean Arks will construct a prototype of its solar aquatics facility in Marion to treat septage, boat wastes and leachate. This project will test both the efficiency and effectiveness of this innovative technology. (See the Fall 1989 edition of the Buzzards Bay Project Newsletter for an article on this process.) This facility will be located both in and adjacent to a greenhouse, and will use constructed wetlands and selected plants, animals, algae and bacteria to cleanse the waste stream. A special focus of this project will be to refine the system's ability to treat toxic waste - metals, synthetic organics, chlorinated hydrocarbons, etc.

Funding for this demonstration project comes from the US Environmental Protection Agency. The $150,000 allocated for this project is divided accordingly:

Barnstable County Health and Environmental Department	$20,000
MA Coastal Zone Management	$45,000
The Coalition for Buzzards Bay	$30,000
SRPEDD	$25,000
Ocean Arks	$29,967
	$149,967

Each individual recipient is required to provide a minimum cost share of at least 25%. The Buzzards Bay Project has identified pathogen contamination as one of the main pollution problems in Buzzards Bay. In an attempt to solve this problem of pathogen contamination the Buzzards Bay Project applied to the US Environmental Protection Agency for funding for a Demonstration Project. The Project has now received funding for two Demonstration Projects. One project, being tested in Buttermilk Bay, focuses on preventing stormwater from entering coastal waters until it has been treated to remove wastes from it. The second project, the treatment and management of septage and boat wastes, has just begun. Through these efforts, the Buzzards Bay Project is trying to make a long-term impact on the water quality of Buzzards Bay.



Nonpoint Source Control Demonstration Project

by Peter M. Boucher, Metcalf & Eddy

Project Overview

Nonpoint source pollution has become recognized as a primary obstacle to the achievement of water quality goals in many areas. There are, however, no well-established institutional or regulatory frameworks to deal with nonpoint sources of pollution. In response to Section 319 of the 1987 amendments to the Clean Water Act, and as a first step in developing this framework, the states are currently developing nonpoint source control strategies through the preparation of nonpoint source assessment reports and management plans. One element of the Massachusetts management plan is the development of nonpoint source control strategies through demonstrations. This article summarizes a recent demonstration project conducted by the Division of Water Pollution Control.

In order to develop approaches and effective means for the assessment and control of nonpoint source pollution problems for use by municipal officials in Massachusetts coastal areas, especially in areas where nonpoint sources have resulted in shellfish closures, the Division of Water Pollution Control, through a contract with Metcalf & Eddy, Inc., is conducting a nonpoint source control demonstration project using the watersheds of Phinneys Harbor in Bourne and Snell Creek in Westport. The planning phase of the project will be completed in November when Metcalf & Eddy will submit three final reports. Two of the reports will contain nonpoint source management plans for the two demonstration areas. The management plans will be used by the Division of Water Pollution Control and cooperating groups to implement pollution control measures in the study areas and to demonstrate their effectiveness. A third report will serve as a guidance document for municipal officials to assist them in developing nonpoint source control strategies in their communities. The guidance document will be disseminated in an educational/technical assistance format to municipal officials from communities experiencing persistent water quality problems derived from nonpoint sources. A summary of the project and the reports being developed is provided below.

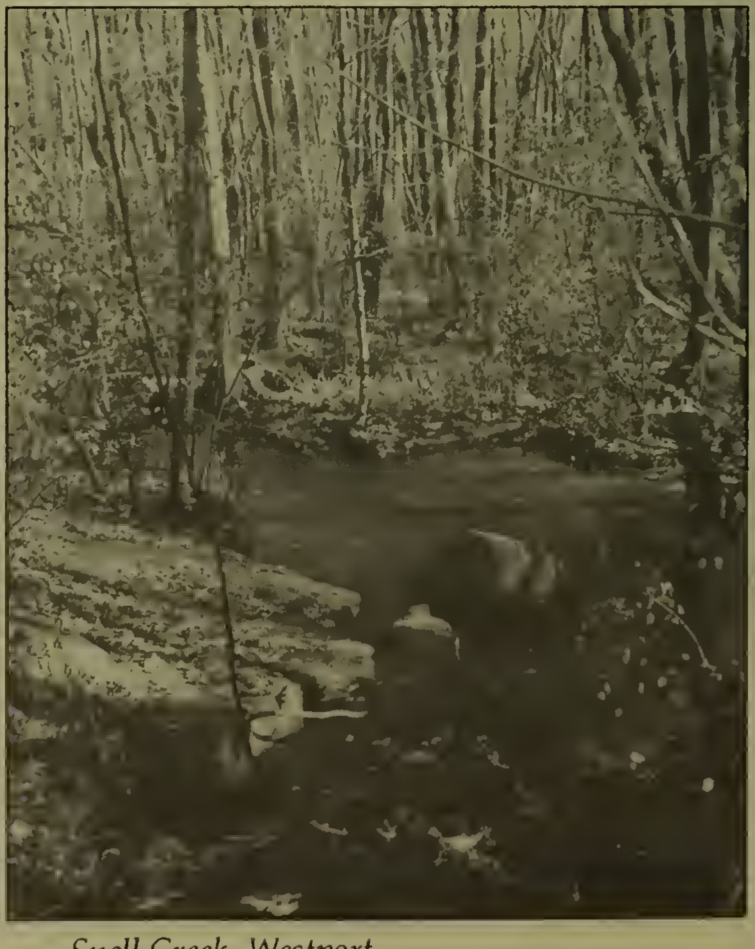
Snell Creek, Westport

The watershed of Snell Creek was chosen from among a number of candidate demonstration areas. A considerable volume of existing environmental assessment information has been reviewed including land use, soils and water quality data.

In order to document existing water quality conditions and to aid in source identification, an extensive water quality analysis was conducted using existing data. In addition to a review of findings of past studies, a database was established by extracting from existing studies all data collected in Snell Creek and at Hix Bridge. This database will help to assess the impact of Snell Creek on shellfish growing areas in the East Branch of the Westport River. Analysis of water quality at Hix Bridge will help to assess the impact of Snell Creek on shellfish growing areas in the East Branch of the Westport River. Analysis of water discharged from Snell Creek to the east branch revealed that over 80 percent of the fecal coliform analyses conducted between 1984 and 1989 exceeded the Massachusetts fecal coliform standard for Class B waters (200 MPN per 100 ml). Further, data collected by several previous sampling programs indicated that severe violations of the Class B standard were rainfall-induced, sometimes producing fecal coliform levels over 10,000 MPN per 100 ml.

Analysis of water quality at Hix Bridge station indicates frequent violations of water quality standards for Class SA waters. Class SA waters are classified for harvesting of shellfish and must have fecal coliform counts below 14 MPN per 100 ml. Data collected by the town of Westport, through a contract with GHR Engineering, indicated that during rainfall, bacteria concentrations at Hix Bridge clearly rise in response to discharges from Snell Creek. Based on hydraulic calculations and existing water quality data, Snell Creek contributes from 20 to 50 percent of the total fecal coliform load at Hix Bridge; thus, reductions in bacteria loading from Snell Creek will likely result in a measurable improvement in water quality at this location. Therefore, one water quality objective of the project is to achieve Class B fecal coliform standards in Snell Creek.

Following extensive field reconnaissance, a detailed list of potential pollution sources in the watershed of Snell Creek was developed including agriculture, land under construction, storm sewers, surface runoff, septic tanks, auto salvage facilities, and domestic and wild animals. These sources were prioritized based on pollution type, pollutant load and transport considerations. Preliminary results of source screening indicate that agricultural runoff and stormwater runoff are significant bacteria sources in the vicinity of Snell Creek. Several pollution control measures are being evaluated to control these sources including filter strips, roof runoff control, and stormwater infiltration. Also under consideration are measures to



Snell Creek, Westport.

continued on page 17

Issues Workshop Overview

by Bruce Rosinoff, Project Staff

The Buzzards Bay Project completed its workshop series last month with a session on Sewage Treatment Options. We are now in the process of integrating the valuable information and suggestions that were discussed at all five workshops into the Comprehensive Conservation and Management Plan (CCMP) for the Bay. In addition to Sewage Treatment, the Project's other workshops focused on: Growth Management; Wetlands and Habitat Protection; Shellfish Protection; and Managing Toxic Substances and Hazardous Wastes. The following is a synopsis of the highlights from the first two sessions. The next Buzzards Bay Project Newsletter will include highlights of the others.

GROWTH MANAGEMENT

·Buzzards Bay is a regional resource and it is incumbent upon all communities to work cooperatively in protecting the Bay. We need to begin to exchange ideas and management approaches in solving our pollution problems.

·The Special Legislative Commission on Growth and Change in Massachusetts believes that the shape of future growth and development is dependent on local and regional planning. The Commission strongly encourages, in its upcoming report, initiation of a continuing planning process at the local level that will result in local comprehensive plans. These plans should be consistent with state and regional goals, and once certified by a "regional entity" (possibly regional planning agencies), would allow for certain benefits, e.g. impact fees and a local land bank. In addition, the Commission suggests that large development projects with regional impact potential should be reviewed by the regional entity.

·We must do a better job in maintaining open space. Older citizens can no longer manage four to five acres, especially when the real estate market continues to rise. It was agreed that greater emphasis on conservation easements and working through local land trusts were two solid alternatives.

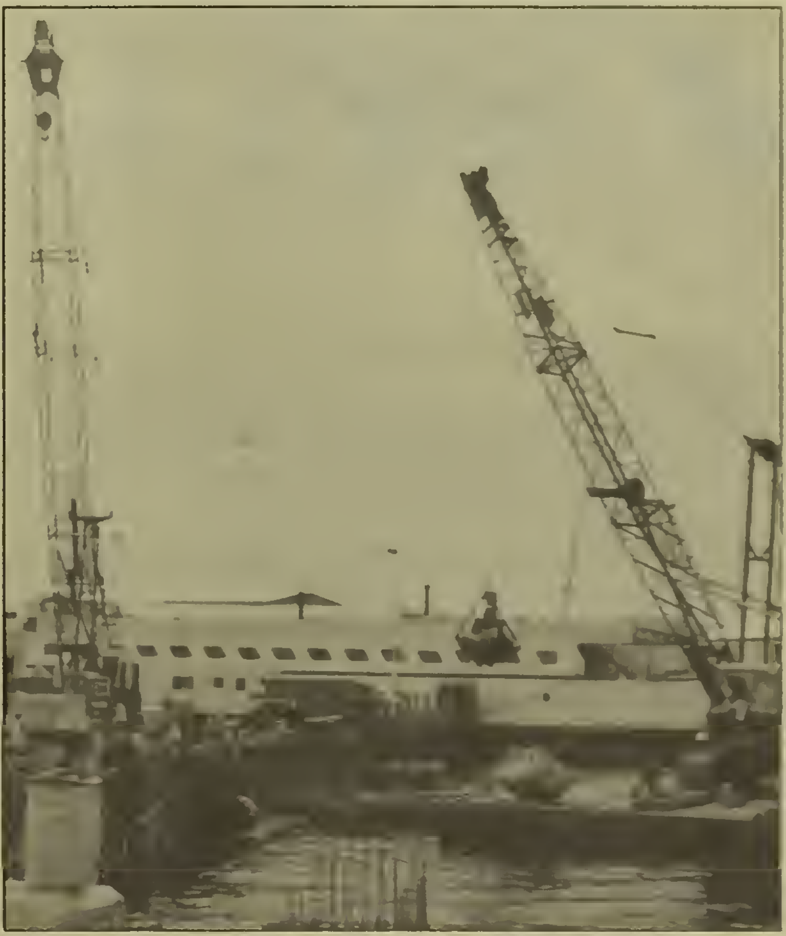
·The audience generally agreed that growth will ultimately cost a town more in services than what is realized in revenue brought in from additional taxes.

·Agricultural preservation is a valuable growth management tool that should be further promoted. Especially in terms of our regional cranberry industry, we should appreciate the large amount of open space (upland) that is being protected.

·Local communities have many management tools that will help them protect Buzzards Bay. The powers of the Boards of Health are tremendous and should be fully utilized. They have been court tested in two landmark cases in Cambridge and Barnstable. As long as local regulation is consistent and logical in its approach and not arbitrary, the town or board is operating from a position of strength. Specifically, to prove that an action does not equate to a taking of property without compensation, three tests must be met: 1) The purpose test (health, safety, welfare is at risk); 2) the means test (health, safety, welfare is being protected by the regulation); and 3) the impact test (the action does not deprive an individual of all reasonable use of property).

·Towns should look toward the use of special town counsel consultants for specialized legal advice. Also, the Conservation Law Foundation and the library of the Massachusetts Association of Conservation Commissions are excellent sources of information. In addition, towns should share knowledge and not operate in a vacuum. They should band together and support each other in the event of legal challenges.

·Town boards should be clear in their procedures and rules so that a process is established in advance of project proposals. Developers need to know "upfront" how their projects will be reviewed to allow for proper planning. It is unfair and counterproductive to change the rules as a development project proceeds through the town's review. Local boards should attempt to design a consistent set of criteria in areas of overlapping jurisdiction.



Judith Gregg

Construction along the coast in Woods Hole.

·Sea level rise considerations should be factored into each town's planning process. Not only are homes and structures close to the shore in jeopardy, but homes further from the water will be affected also. Issues such as wetland migration and separation distance from a septic system leaching area to groundwater need to be addressed. Communities should identify lands that will be subject to sea level rise. Setbacks for new structures, septic systems, and private wells should be based in part on projected sea level rise. There was general agreement from the audience that these issues have not been considered but must be in the future.

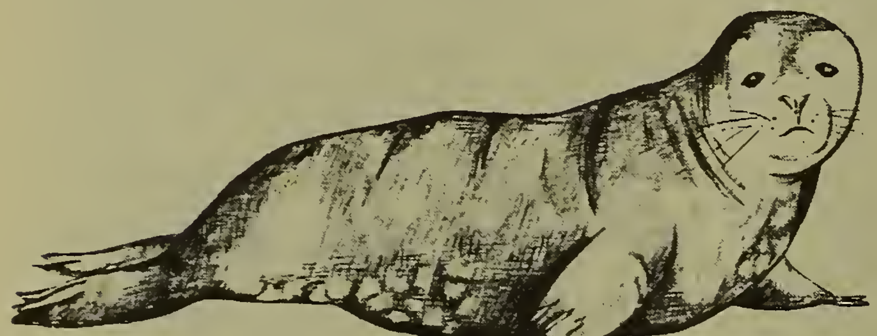
continued on page 15

CALENDAR

JANUARY

6
SATURDAY

Seal Watch - 9:30 a.m.-4:00 p.m. Lloyd Center staff will guide you on a natural history tour featuring harbor seals hauled out on Pease Ledge and Gull Island. On our way across Buzzards Bay, we will have ample time to watch for sea birds. Once we reach Cuttyhunk Island, we will explore both its natural and human history. Fee: $30 for members, $40 for non-members. Enrollment is limited so register now with the Lloyd Center at (508) 990-0505.



7
SUNDAY

See Sea Ducks - 9:00 a.m.-11:00 a.m. Eiders, scoters, loons and grebes abound in our coastal waters. Dr. Alan Hankin will lead this Lloyd Center weekly walk. Fee: free to members, $5 for non-members. For registration and information call the Lloyd Center at (508) 990-0505.

14
SUNDAY

Raptors Of The Lakeville Area - 9:00 a.m.-11:00 a.m. View hawks and eagles in their natural habitat. Karen Holmes will lead this Lloyd Center weekly walk. Fee: $3 for members, $5 for non-members, $1 for children. Call the Lloyd Center for registration and details at (508) 990-0505.

20
SATURDAY

The Night Sky - 7:00 p.m.-9:00 p.m. Cast of billions! Star attractions include Orion and the Seven Sisters. Join Krystal Tolley as she leads this Lloyd Center weekly walk. Fee: $3 for members, $5 for non-members, $1 for children. Call the Lloyd Center at (508) 990-0505 for registration and details. (If cloudy or raining the program will be on January 21).

28
SUNDAY

Winter Beach Walk - 1:30 p.m.-3:00 p.m. Beaches change with the seasons. Discover what makes the winter beach unique. Dick Audet will lead this Lloyd Center weekly walk Fee: $3 for members, $5 non-members, $1 for children. Call the Lloyd Center at (508) 990-0505 for registration and details.

29 - 9
Monday-Friday

Two Week Short-Course in Ecological Landscape Design - Spend two weeks this winter at the New Alchemy Institute designing landscapes for a future filled with beauty and ecological promise. For more information contact: Education Director, New Alchemy Institute, 237 Hatchville Road, East Falmouth, MA 02536, or call (508) 564-6301.

FEBRUARY

3
SATURDAY

Maritime History Program - 2:00 p.m. Join Dan Sealy from the Cape Cod National Seashore for this program. Call the Cape Cod Museum of Natural History for details at (508) 896-3867.

4
SUNDAY

Birds of Sachuest - 9:00 a.m.-11:00 a.m. Lloyd Center Research Coordinator Mark Mello will lead this weekly walk exploring Sachuest Wildlife Reserve in Rhode Island and watch for sea birds. Fee: free to members, $5 for non-members. Call the Lloyd Center at (508) 990-0505 for registration and details.

10
SATURDAY

Lighthouses of the Lower Cape - 2:00 p.m. Admont Clarke will lead this program at the Cape Cod Museum of Natural History. Call the Museum at (508) 896-3867 for details.

11
SUNDAY

Winter in the Pine Barrens by Cross-Country Ski - 1:00 p.m.-4:00 p.m. Glide through Myles Standish State Forest with the Lloyd Center, exploring wildlife as you go. Bette Low will lead this weekly ski, or walk if there is not enough snow. Bring your own skis. Fee: $3 for members, $5 for non-members, $1 for children. Call the Lloyd Center at (508) 990-0505 for registration and more information.

18

SUNDAY

Owl Prowl - 3:30 a.m.-6:00 a.m. Rise early on a clear winter night, throw on your outdoor clothes, and come through the woods and fields with Lloyd Center Ornithologist Dr. Alan Hankin on our 8th annual Owl Prowl. During late February, owls are setting up nesting territories. This is the best time of year to catch a glimpse of these silent night fliers. Learn all about these fascinating birds, and join us for breakfast too. Open only to members for $5. Call the Lloyd Center at (508) 990-0505 for registration and details.

20

SATURDAY

Maps! Maps! Maps! - Visit the Lloyd Center and explore the world of maps. This exhibit will feature the history of map-making as well as the wide variety of maps available from land to sea to stars! To celebrate the opening of this exhibit, the Lloyd Center is having an open house from 10:00am to 4:00pm on Saturday, January 20th. The exhibit will be open during regular building hours at the Center, Tuesday-Sunday 9:00am-5:00pm, through May 18th.

21

WEDNESDAY

Animal Song, Sing Along - 1:30 p.m. Join the Cape Cod Museum of Natural History and learn the songs animals sing. For more information call the Museum at (508) 896-3867.

23

FRIDAY

Live Animals from Safari Square - 1:00 p.m. Call the Cape Cod Museum of Natural History at (508) 896-3867 for details.

24

SATURDAY

Seal Watch - 9:30 a.m.-4:00 p.m. Lloyd Center staff will guide you on a natural history tour featuring harbor seals hauled out on Pease Ledge and Gull Island. On our way across Buzzards Bay, we will have ample time to watch for sea birds. Once we reach Cuttyhunk Island, we will explore both its natural and human history. Fee: $30 for members, $40 for non-members. Enrollment is limited so register now with the Lloyd Center at (508) 990-0505.

24

SATURDAY

Bat Ventriloquist - 11:00 a.m. Call the Cape Cod Museum of Natural History at (508) 896-3867 for details.

25

SUNDAY

Owl Prowl - 3:30 a.m.-6:00 a.m. Rise early on a clear winter night, throw on your outdoor clothes, and come through the woods and fields with Lloyd Center Ornithologist Bob Maker on our 8th annual Owl Prowl. During late February, owls are setting up nesting territories. This is the best time of year to catch a glimpse of these silent night fliers. Learn all about these fascinating birds, and join us for breakfast too. Fee: $5 for members and $7 for non-members. Call the Lloyd Center at (508) 990-0505 for registration and more information.

Don't get closed out of a program, register early!

Project Reports Available

The research work and other studies of the Buzzards Bay Project are being summarized in the form of technical reports. After a review process, each of these reports is being made available to the public on request. The titles presently available are:

BBP-88-01	*Inventory of Local Regulations Pertaining to Water Quality in Buzzards Bay*	SRPEDD
BBP-88-02	*Shellfish in Buzzards Bay: A Resource Assessment*	M. Alber
BBP-88-03	*Bacteriological Monitoring in Buttermilk Bay*	G. Heufelder
BBP-88-04	*Survival and Transport of Enteric Bacteria and Viruses in the Nearshore Marine Environment: An Annotated Bibliography*	G. Heufelder and S. Rask
BBP-88-05	*Eelgrass in Buzzards Bay: Distribution, Production, and Historical Changes in Abundance*	J. Costa
BBP-88-06	*Identification and Collection of Historical Data Sets for Buzzards Bay*	B. Brown and J. Gale
BBP-88-07	*Identification and Collection of Historical Data Sets for Buzzards Bay: Summary of Existing Literature*	B. Brown, T. Stenner and J. Gale
BBP-89-11	*Technical Resource Manual: A Reference of Buzzards Bay Communities*	SRPEDD
BBP-89-12	*Sample Bylaws and Regulations*	SRPEDD
BBP-89-13	*Assessment of past Implementation of Local Water Quality Recommendations in the Buzzards Bay Drainage Basin*	SRPEDD

To receive a copy of any of these reports, contact:

Barbara Sego
Project Coordinator
Lloyd Center
P.O. Box 7037
South Dartmouth, MA 02748
(508)990-0505

RECYCLING AND COMPOSTING BREAKTHROUGHS

Bourne

Bourne is seeking community participation in its new composting program. Leaves, and other organic matter, can be brought to the landfill off MacArthur Boulevard. In order to make composting convenient for everyone, officials are discussing the possibility of vacuuming up leaves from piles left on the curb. Another suggestion is to have Boy Scout, Girl Scout and garden club members aid in the collection of leaves. Aluminum and glass are also being collected in bins at the landfill .

(The Falmouth Enterprise, August 7, September 13; The Bourne Courier, September 20)

Dartmouth and New Bedford

Concerned that the Dartmouth landfill will be full in less than a year, and the New Bedford landfill will be full within two years, city and town officials are starting a composting program. The compost will be used as cover material for the landfills, and provide fertilizer and mulch for the city and town departments. It is estimated that this composting program will save the town of Dartmouth between $10,800 and $21,800 in topsoil and at least 3% of the space in the landfills each year. New Bedford will also begin to recycle cardboard and major appliances.

(The Standard Times, October 6 & 21)

Rochester

Rochester is to begin a pilot recycling program with SEMASS in October. Glass, aluminum and steel cans and plastic milk, water and soda jugs will be collected in differently colored bags during the regular, weekly collections. SEMASS workers will then separate the colored bags from the waste stream for collection at a temporary recycling center until Materials Recovery Recycling Corporation can find markets for the materials.

Rochester residents are concerned over the proposed state-funded expansion of SEMASS, claiming that the waste to energy plant has trouble enough operating at the current size. Some residents are accusing the plant with the mismanagement of its landfill, the diversion of well water from local businesses and homes, and the production of odors, noise and dust that is bothersome to neighbors. Other residents disagree with the practice of incineration in general, claiming that it releases pollution into the air and hazardous ash into the landfill, and that it produces dangerous by-products from the burning of shredded automobile residues.

(The Standard Times, September 8 & 18, October 14; The Sentinel, September 27)

Carver-Marion-Wareham

A suit has been filed against the Carver-Marion-Wareham Regional Refuse Disposal District for environmental violations. The district is being charged for the contamination of groundwater from the leaching of pollutants in the landfill, and for improper covering, grading and drainage systems. The state is seeking a court order to prevent any further dumping of garbage in a way that endangers the environment. The district may also face civil penalties of $25,000 a day for each violation.

(The Standard Times, September 29; The Sentinel, October 4; The Wareham Courier, October 4)

Westport

With the Westport landfill filling at an alarming rate, citizens have called for a special election to decide how to deal with the problem. One referendum would allow the town to raise $200,000 for new compacting equipment by increasing municipal real estate and property taxes. The compactor now in use is only half as efficient as a new compactor and it has cost the town $30,000 in repairs over the past two years. The second referendum would allow the town to borrow $2.95 million to close the existing landfill and to purchase and develop land for a new one.

Westport town officials met with Mr. Shibol, a representative of Mark Hutchins Assoc., to discuss recycling for the town. Mr. Shibol explained the financial benefits of recycling, and informed officials on the percent participation they could expect. According to Shibol, up to 8% of trash is recyclable glass containers, up to 9% is recyclable metal, and up to 6% is recyclable plastic. Shibol also estimated that 18% of the waste stream is organic yard waste that can be removed by starting a composting program. Any material that is recycled saves the town landfill space and money.

(The Standard Times, August 15; The Chronicle, August 16 & October 11)

Judith Gregg

The Dartmouth Landfill.

SEWAGE

Boat Waste

The Falmouth Inner Harbor Marina has plans to hook into the town sewer system. This hook-up will, hopefully, reduce the threat of boat discharges into the harbor by vessels at the docks. By hooking into the town sewer, the marina will also reduce the risk of pollutants leaching from its septic tank into the harbor. If the marina is not allowed to hook into the town sewer system that abuts its property, they will be forced to install a new, larger septic tank at a great expense to the marina.

(The Cape Cod Times, August 15; The Enterprise, September 27 & 29)

Dartmouth

Dartmouth, once again, is in search of a waste treatment facility to take their sewage. After New Bedford turned them away in the face of their own sewering troubles, Dartmouth turned to Marion. A six month agreement with Marion ended prematurely due to the recent heavy rains that have slowed down the treatment process. Normally, solids from the septage are pumped to treatment lagoons to dry before being composted. With the heavy rains, the solids have not been drying fast enough, causing a backlog in the treatment process. With the added stress on the system, Marion felt they could not accept any more of Dartmouth's waste. Now, Dartmouth is looking to Somerset and Fairhaven to accept their waste. Dartmouth's own septic tanks will not be completed until next winter.

(The Standard Times, August 18; The Sentinel, August 23; The Chronicle, August 23)

New Bedford

Debate is hot over the building of a new secondary treatment facility in New Bedford. The city is under a federal court order to build a secondary sewage treatment plant by 1993, and faces large fines if it does not comply within the time limit. The engineering firm of Camp Dresser and McKee has prepared plans and cost estimates for two sites for the treatment plant, Fort Rodman and the Standard Times field, and two sites for the sludge dump, near the airport and in the industrial park. They recommend, and Mayor John Bullard endorses, the Fort Rodman and airport site combination.

There have been numerous arguments presented for the siting of the treatment plant at Fort Rodman. Some of the more prominent arguments are: first, the Standard Times site is a valuable source of revenue for the city because of its potential for commercial development. Second, the Standard Times site would require the installation of new sewer pipes and pumping stations that would create great upheavals in the city's streets. Third, the renovations of Fort Taber, made possible if construction is done at the Fort Rodman site, would drastically improve the area for recreation. Fourth, Ward 4, where the Standard Times site is located, has been the dumping grounds for all of the city's other unwanted projects.

On the other side, 8 of the 11 city councilors disagree with the siting of the plant at the Fort Rodman site. Some of the more prominent arguments include: first, the city will have to go through a complex process to get permits for building a treatment facility at Fort Rodman, while the Standard Times site can be taken by eminent domain. Second, a treatment plant at Fort Rodman would ruin valuable land for recreation and tourist attraction. Third, a $200 million dollar city investment should not be made outside the hurricane barrier.

A third contingent argues that the plant should not be built at all. New Bedford City Councilor George Rogers and Environmental Consultant Larry Silverman have been very vocal in the argument that New Bedford can meet EPA standards by a less costly, simpler approach. First, by fixing the sewer pipes the amount of wastewater being transported to the plant can be reduced by half. Second, by dealing with the city's combined sewage overflows, the city's most serious problem would be alleviated. Third, by creating an advanced primary treatment plant the city can treat the sewage to the level of EPA standards. Amidst outcries, Mayor Bullard has hired Silverman as a member of the consulting team to scrutinize the plant proposal.

Judith Gregg

The New Bedford Sewage Treatment Facility.

Of course, Silverman's arguments are not without opposing arguments. City Environmental Planner Marcy Wetherbee says that no other community has been able to reduce flow volumes by more than 20% by fixing old pipes, and some of New Bedford's sewers, built in 1902, have entire tree roots growing through them. Concerning the combined sewer overflow issue, Mayor Bullard says a Draft Facilities Plan Document will be available in October, but work will not begin until the treatment plant is built. Finally, in response to Silverman's proposal for advanced primary treatment, Wetherbee claims that advanced primary treatment was considered, but that secondary treatment was determined to be the only effective solution.

(The Standard Times, August 31, September 12, 14, 21, 28 & 29, October 1, 8 & 20; The Chronicle, September 13)

Otis Air Base

There is rising concern among Buzzards Bay officials and citizens over plans to discharge Otis Air National Guard's waste into the Cape Cod Canal. The Otis treatment plant has contaminated water in Falmouth and Mashpee in the past, and after spending hundreds of thousands of dollars to clean-up Bourne's coastal waters, no one is excited about Otis' proposal. The town of Bourne voted in 1976 not to discharge its own waste into the canal, and, according to selectman Marie Oliva, the canal discharge would be contrary to the local fight against pollution. Survey project manager John Krummel says that there will not be any definite decision made until after all statements from concerned citizens and officials have been addressed.

The proposal most agreeable to local citizens and officials is one offered by Cornelius J. O'Leary, acting

continued on page 12

Around The Bay
continued from page 11

director of the Division of Water Pollution Control. O'Leary suggests that the base treat the effluent to meet drinking water standards and then pipe it to sand infiltration beds on the base. A final impact statement is expected this fall from the engineering firm of Camp Dresser & McKee.

(The Bourne Courier, August 2 & 16; The Cape Cod Times, September 9)

GROUNDWATER CONTAMINATION

Dartmouth

At a special town meeting September 26, Dartmouth citizens debated an article dealing with the limitation of house lots to one bedroom per 20,000 square feet of land. The article is being proposed to protect the aquifer. By limiting the septic load in any one area, nitrate concentrations can be kept to a minimum, thus, reducing the amount of contamination reaching the aquifer.

If the article passes, only about 340 acres will be affected in the Aquifer Protection Zone because a large percentage of the land is already not developable under existing zoning. However, residents are concerned that the article would prohibit families from taking in elderly relatives, unless they already had the extra bedroom. Town Planner Robert Ericson does not expect the article to pass, but the Planning Board will keep trying to pass some less emotional legislation to protect the aquifer.

(The Standard Times, September 27; The Chronicle, October 11)

Otis Air Base

Clean-up plans continue for the 11 contaminated sites at the Massachusetts Military Reservation. Progress has been made in three major areas.

First, the senate has approved $5.2 million to replace the base's 35-year-old underground fuel tank storage system. Senator Edward M. Kennedy, D-Mass, is seeking $22 million over the next three years for a three phase project to protect the Cape's aquifer. Phase one is to replace the fuel tank system. Phase two is to cap the base's landfill. Phase three is to upgrade the sewage treatment plant to meet state standards.

Second, the Conservation Law Foundation and the federal National Guard Bureau have finally reached an out-of-court settlement concerning the base's environmental violations. Some of the terms of the settlement include: F-15 fighters will be allowed to remain on the base provided they continue noise reduction procedures. The military has four months to begin the location and cleaning of the underground fuel tanks. The base can not exceed 300,000 gallons per day of sewage until the treatment plant has been upgraded. The military must conduct an in-depth environmental study and a central environmental office must be formed to coordinate the activities of the different departments.

Third, the State Department of Environmental Protection officially classified the base as a "priority site" on October 13. As a "priority site," the military has four years to implement either permanent or temporary clean-up measures for all 42 possible areas of contamination. State officials are hoping that this designation will persuade the EPA to put the base on the Superfund's list of national priorities.

(The Cape Cod Times, August 14 & 24, September 16 & 19, October 11 & 14; The Bourne Courier, September 20)

SRPEDD

The Southeast Regional Planning and Development District (SRPEDD) prepared a comprehensive report on groundwater protection. The report was funded by a grant from the Department of Environmental Protection under the state's Clean Water Act, and is designed to help local cities and towns protect their water resources. Included in the report is a summary of all the bylaws in the area that protect the groundwater, with guidelines for communities who want to implement stricter regulations. Updated regional maps delineating underground aquifers and their "zones of contribution" are included to aid communities in researching and drafting water management plans. In addition, in light of DEP's recent toughening of regulations on underground fuel storage tanks, the report includes regulations and methods for safeguarding against contamination from leaking tanks.

Other projects under review by SRPEDD are two 300 megawatt coal fired plants proposed in New Bedford. SRPEDD will look closely at the plants' impact on air quality and water supply. Also under review is the proposed expansion of New Bedford's Shawmut Avenue landfill.

(The Chronicle, August 2)

COASTAL MANAGEMENT

Falmouth

The Falmouth Planning Board Subcommittee has proposed eight goals in the Coastal Zone Action Plan to be voted on in late October. The Board plans to use the approved goals as guidelines for the establishment of bylaws and regulations to protect the town's waterways and coastal areas.

The goals are: 1) to protect and improve water quality and other natural resources; 2) to reconcile the interests of the many water users, and to address the needs of both water-dependent and non-water dependent development; 3) to encourage commercial marine interests such as the Woods Hole fishing fleet, shellfishermen, mariculture, aquaculture, charter boats and commercial boatyards and marinas; 4) to maintain and enhance scenic qualities and increase public access to coastal areas; 5) to alleviate traffic congestion and parking problems; 6) to propose ways to insure that local laws reflect federal laws and that local laws are legal and in addition, to fund law enforcement, capital improvements and staffing needs for planning, maintenance and harbor management; 7) to inform the public about these issues; and, 8) to create an organizational structure to oversee implementation of this plan. Citizens present at a public meeting expressed concern over whether jet skis and fertilizer applications on town cranberry bogs would be addressed.

In order to reach the goals set forth in the Coastal Zone Action Plan, the Board recommends that the town zone its waterways. The Board also recommends that the town add several full time positions to aid Falmouth's waterways.

The waterways committee is proposing the addition of a wharfinger position, expanding the secretary's hours, and adding another boat to the harbormaster's fleet, to be voted on in the next town meeting.

(The Enterprise, October 4)

Wareham

The Wareham Planing Board is proposing several articles, in an October town meeting, designed to protect the environment. In order to protect wetlands from increasing pressure from development, several articles have been proposed to prohibit construction within 50 feet of wetlands of anything except water dependent construction, fences and bridges. These articles also require more upland acreage for buildable lots. Local engineer, Charles Rowley is concerned that these regulations would prohibit roads across wetlands and drainage facilities for highways.

In order to control the density of development, the Planning Board has proposed several articles regulating the amount of land that can be developed on commercial lots. These articles would enable a buffer zone between developments so that there is not continual pavement for large tracts of land.

A final proposal by the Planning Board is an article allowing apartments in residential areas provided the owner lives in the residence, and the building conforms to the single family home nature of the area. This article would give the Planning Board more control over illegal apartments.

The Board anticipates strong opposition to these articles in the town meeting from local engineers and developers.

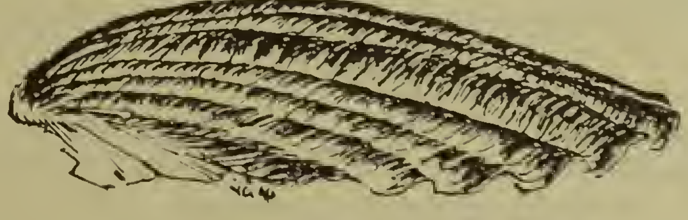
STATUS OF SHELLFISH

State Budget Cuts Affect Propagation Programs

Fairhaven

Fairhaven Shellfish Warden Joseph Pauline does not believe that the towns coves will be able to survive the strain of the current shellfishing burden without a propagation program. Therefore, with the proposed state budget cuts for the fiscal year '90, Pauline is looking for new sources of funding. One possibility is to raise the license fees which have already been increased 15% from last year. Another option is to institute a mooring permit program and a town fining system.

Under the current propagation program the four coves are used on a rotational basis. Only one cove is opened each year for shellfishing while the remaining three are allowed to restock. If the town decides to eliminate propagation funds completely, the four town coves could withstand the fishing pressures for three years before the resources would be depleted.



Mattapoisett

Without state funding, Mattapoisett Shellfish Constable Brian Nunes fears he may need to raise the cost of shellfish licenses to continue the propagation program which costs $9,100 each year. Without the propagation program the already diminishing number of license holders may decrease even more. Last year over $6,500 in license fees was collected from the 558 holders, compared to the 920 license holders the previous year. Aside from raising license fees, Nunes is hoping that clubs, such as the local Lions Club, will help out with donations.

(The Advocate, August 16; The Sentinel, August 16)

Wareham

The Wareham Shellfish Association was granted approval of its plans to transfer contaminated shellfish from the Wareham River, not the Taunton River as originally planned, to Widows Cove. Although the Taunton River oysters are of a better quality, those in the Wareham River are closer, and therefore, easier to transfer.

Under the proposal, oysters that meet EPA standards, and do not contain metals, PCBs and hydrocarbons, will be relayed from the polluted waters of the Wareham River to the clean waters of Widows Cove. The oysters will be allowed to purify themselves through one spring spawning period, after which time 10% of the clean oysters will be harvested by recreational license holders.

Residents of Widows Cove have expressed concern that the transferral of contaminated oysters into the cove will pollute the clean water. Paul Girard, a spokesman for the commercial shellfishermen, addressed these concerns saying, "we would never, in any manner, do anything that would adversely affect ocean waters anywhere."

To ensure that the relay program is done properly, Environmental Protection Officers will be on site to supervise the entire process. The shellfishermen are proposing to fund the entire project privately.

(Wareham Courier, September 6 & 20, October 11)

Shellfish Closures

Falmouth shellfish beds seem to have survived the Food and Drug Administration survey in relatively good shape. The FDA ordered all shellfish areas to be surveyed by September 1, or be closed. Thanks to an enormous effort by town officials and residents, working up to 70 hours a week, the state was saved from massive closures. The only area along the Buzzards Bay shoreline in Falmouth that is closed to shellfishing is the Herring River, which is closed because the nitrogen levels are too high. All the other areas in Falmouth are open, except where propagation programs are in progress.

The rest of Buzzards Bay did not fair as well. According to the Coalition for Buzzards Bay, shellfish bed closures increased about 2,000 acres over the summer to 16,249 acres as of September 1. These closures account for 25.9% of the acres closed in the state.

In order to prevent further contamination of shellfish areas, the Coalition has several recommendations for responsible behavior including: boaters should use pumpout

continued on page 14

Around The Bay
continued from page 13

facilities, homeowners should have septic systems pumped regularly, dog owners should clean up after their pets and people should refrain from feeding waterfowl.

(Bourne Courier, September 20; The Enterprise, October 18)

SCALLOPS

Shellfish officers are predicting another slow scallop season this year. While the bay scallop can live in polluted water and still be eaten, and while they only take 18 months to mature compared to the 3 to 4 years required by clams and quahogs, the bay scallop has not had a good season in Buzzards Bay for 10 years. The reason for the poor bay scallop success is a mystery. However, biologists suspect that the scallops sensitivity to temperature, salinity and pollution may be a factor.

In 1985, 70,000 bushels were harvested from Westport. The following year only found one bushel in Westport and last year, in all of Buzzards Bay, only 118 bushels were harvested. Shellfish wardens in several communities are delaying the opening of the scallop season this year in hopes that it will give a few more scallops the chance to release their spat, and hopefully, help out next year's crop. Specific openings and regulations have been announced for each town, and are available through the selectmen's offices.

(The Enterprise, September 27; The Standard Times, October 2)

COASTWEEKS '89

Environmental Affairs Secretary John DeVillars expected 4,000 volunteers to participate in beach cleanups along Massachusett's shoreline as part of the Coastweeks '89 celebration. Some two dozen states are involved in the beach cleanups as part of a national effort to increase appreciation and protection of the fragile environment of the nation's shores. In addition to beach cleanups, there are exhibits, lectures, walks and workshops planned by local government and private groups during the weeks from September 16 to October 9. The Coastweeks program is now in its eighth year.

According to Anne Smrcina of Coastal Zone Management, six-pack rings, plastic bags and polystyrene cups are discarded by the ton every day. These plastics are not only unsightly, but also hazardous to marine wildlife. Fish, birds and marine mammals often become entangled in discarded plastic, and sea turtles often ingest plastic bags, confusing them for jellyfish. Last year 2,200 people collected 25 tons of trash. As of September 25 this year, 2,700 volunteers have cleaned 25 miles of coast and collected 28 tons of trash. The data collected during these cleanups will be used by the Center for Marine Conservation in Washington, D.C. in their studies on beach pollution. According to one writer, "only through awareness of the issue and analysis of available data will citizens and governments find a way toward a solution."

COASTAL CLEANUPS

Bourne

On September 24, second graders from the Hoxie School and their parents gathered to clean Scusset Beach. Approximately 50 people collected 150 pounds of debris from a half mile stretch of beach. In addition, Bourne High School teacher Rod Weston brought his class from the Alternative Learning Program For Success to clean four town beaches. The beach cleanups, and other activities, are exercises to get the students "to be a cohesive unit, to work toward a common goal," says Weston.

Dartmouth and Mattapoisett

The Lloyd Center joined with people nationwide in celebrating Coastweeks '89 with two beach cleanups this fall. On September 24 and 30, volunteers and Lloyd Center staff scoured approximately 2.5 miles of shoreline in Dartmouth and Mattapoisett, and picked up more than 1000 pounds of trash. Volunteers cleaned the shoreline of Mattapoisett Harbor and Demarest Lloyd State Park.

Save Our Shores volunteers also participated in two beach cleanups in October. The conservation beach near the Padanaram bridge was scoured by 20 people on October 1. The group collected about 400 pounds of trash, two automobile tires and some planks from the beach. A similar cleanup was done at the Round Hill beach later in the month.

Falmouth

Four classes of fifth graders from Morse Pond School participated in a cleanup of Surf Drive Beach to enhance their regular curriculum. According to teacher Pat Keoughan, "Today it's our science project. It becomes a math exercise when the students graph their findings and compare them with last year's results." The students will also enter a poster contest for Coastweeks and write compositions on the cleanup.

In addition, 200 volunteers cleaned 10 miles of shore in Falmouth on September 23 & 24. These volunteers collected 2 tons of trash. In an effort to minimize the amount of garbage on the town beaches, the 300 Committee has removed the trash cans from the beaches for the winter. In the past the Committee has found that the cans are used to dispose of household waste that ends up being blown all over the beach in the winter.

(Bourne Courier, October 4; Cape Cod Times, September 11 & 12; The Chronicle, September 13, October 18; The Enterprise, September 13, 18, 22 & 23, October 16)

Issues Workshop Overview...
continued from page 7

WETLANDS AND HABITAT PROTECTION

·The Wetlands Protection Act (WPA) and Subsurface Disposal under Title V should be better coordinated. Each program should contain provisions that recognize the other programs' objectives. For example, the filling of 5,000 feet of land bordering vegetated wetlands, to meet Title V setbacks, should not be permitted. Title V setbacks from mean high water can result in the installation of systems in coastal dunes and beaches.

·The state should promote an approach used in the Town of Rochester. This town files a non-compliance lien against real property for violations under the WPA. This encumbrance, somewhat similar to a financial lien, puts the town, the landowner, and subsequent lenders or buyers on notice that a violation has occurred on a specific property. Another aspect of Rochester's approach that is worth copying involves coordination with the building inspector. No occupancy permits are issued by the inspector before an order of conditions is developed.

·The state should make the procedures for filing a wetlands violation complaint more accessible to conservation commissions and citizens at large. Efforts that are already underway to publish an enforcement manual should be expedited.

·Equipment operators engaged in the illegal filling of wetlands should be liable for violations. If an equipment operator is found to be knowingly in violation, that person should be warned through a citation. If an operator receives a number of warnings, his right to operate the equipment should be suspended.

·Local governments have been frustrated by the lack of access to a statewide database that would disclose a developer's history of WPA violations. Statewide legislation should be enacted that allows the Department of Environmental Protection (DEP) not to process an application from a developer who is currently violating the WPA elsewhere in the state.

·The Wetlands Restriction Program needs to be resumed in the Buzzards Bay area. It is a powerful and effective program that will be abundantly helpful to the Buzzards Bay Communities. The Buzzards Bay Advisory Committee has petitioned the Department of Environmental Protection for continuance of the program in Buzzards Bay.

·The state should empower Conservation Commissioners to walk onto any property which requires their inspection. Also, Orders of Condition should state that the Conservation Commission has the right of entry to inspect work.

·Wetlands review fees should not go into the state's general fund. They should be dedicated to the administration of the WPA. The same is true at the local level. Also, Conservation Commissions should have a budget item of at least $500 to $1000 per year for special consultant services. Some cases are so complex that a true expert is required.

·Local Wetlands bylaws can and should increase jurisdiction beyond the Wetlands Protection Act. We need to develop performance standards in the buffer zone that are applied throughout Buzzards Bay. The town of Falmouth has done an excellent job in this area.

·Selectmen must appoint Conservation Commissioners who are supportive of the Commonwealth's wetlands policies. Selectmen must also ensure that Conservation Commissioners will enforce the WPA, regardless of the political pressures exerted locally. Concerned citizens should apply pressure to ensure that this is done. Also, individual citizens who are concerned that wetlands are being filled illegally should file a Request for Determination of Applicability with the town to ascertain the legality of the operation in question. There is a great deal that concerned citizens can do in their towns to promote wetlands protection.

·DEP needs to train Conservation Commissioners on the latitude that they have in denying a project. It is also critical that Conservation Commissioners employ professional staff who fully understand the complexities of the Wetlands Protection Act. We are allowing the filling of major wetland areas solely from a lack of knowledge of what is, and what is not, a wetland.

·Wetland replication has been proven to be inadequate, especially on a one to one basis. Replication should be avoided as a mitigation measure. If replication is to be used as a last resort, it should be carried out on a two to one or three to one basis.

·Conservation Commissioners must develop the proper administrative trail to ensure that an enforcement order stands up. Commissioners must clearly state what was done and what is wanted from the accused to rectify the situation. A good strategy is to always try and settle before the action goes to court. The fine should be forgotten if what has been filled will be put back to its original condition.

Correction

Do to an oversight on our part there was a mistake in the Fall 1989 edition of *The Buzzards Bay Project Newsletter*. In the article "Environmental Protection at the Local Level" the town of Falmouth was not listed with the other towns in the chart on Boards Under the Management of Town Selectmen. For the town of Falmouth the Selectmen are elected and also serve as the members of the Board of Health. The Planning Board members and the members of the Board of Appeals are elected independently. The Conservation Commission members are appointed by the Board of Selectman. We apologize for any inconvenience this may have caused.

Technical Advisory Committee Fall Update

by Frances Brewster, Newsletter Staff

The Buzzards Bay Project Technical Advisory Committee (TAC) meets monthly to discuss the progress of the Project. The TAC has met three times this fall to discuss the status of current programs, to review Project proposals and to make recommendations for future actions.

August 17, 1989

In the August meeting Dr. Joseph Costa, Buzzards Bay Project Coordinator for the State, announced that a subcommittee would be established to review proposals for a Buzzards Bay Monitoring Plan. The subcommittee would make its recommendations, and a contractor would be selected in September.

Neil MacGaffey gave a review of the Data Management Program and his involvement in it. The program involves a three phase plan. First, the Buzzards Bay drainage basin boundary will be delineated. Second, the Bay will be segmented into highresolution areas. Third, a Buzzards Bay Project (BBP) database will be established.

The TAC decided to review the Environmental Impact Report for the New Bedford sewage treatment plant facilities plan because the outfall is a major source of pollution in Buzzards Bay. The TAC's review will be submitted under the Massachusetts Environmental Protection Act (MEPA) before the end of the comment period on October 25.

The TAC recommended that Department of Environmental Protection (DEP) postpone any further sampling of Buzzards Bay. This decision was made because of past problems that the Project has had with some of DEP's analyses. In addition, not all of the pollution in Buzzards Bay has been characterized yet.

September 18, 1989

Representatives of Camp Dresser & McKee (CDM), the US Environmental Protection Agency (EPA), and Massachusetts Coastal Zone Management (CZM) and Department of Environmental Protection (DEP) gave presentations on their roles and concerns in the New Bedford sewage treatment facilities plan.

Jim Small of CDM began the presentations with an update of the project status and schedule. Of special note is the October 25 deadline on the MEPA comment period. MEPA is expected to issue a certificate of compliance and comments on the Plan within 7-10 days after the end of the comment period. The final Environmental Impact Report is due January 17, 1990. Small also outlined the contents of the six volume report issued by CDM.

Following an overview of the environmental and engineering criteria, Bernadette Colb announced CDM's recommendation for the effluent outfall siting. CDM is recommending cleaning the existing 60-inch cast iron pipe and lining it with a new pipe, to lengthen its lifespan, because, "the marginal benefits of the other alternatives (measured primarily in terms of increased dilution) do not appear to justify the expenditures ($35 to $65 million) necessary to achieve them."

Phil Colarusso of the EPA followed with an outline of the EPA's concerns in the analysis of the outfall siting. First, the toxicity data show that the outfall will be unable to meet the initial dilution requirements. Second, chlorine toxicity will be a potential problem at either siting. (The two sitings under consideration are the existing one and a new siting further out in Buzzards Bay.) Third, computer modeling of the bay indicate that dissolved oxygen concentrations will be of concern. Finally, the EPA feels that CDM has underestimated the productivity of the area in their calculations.

Judy Pederson expressed CZM's concerns with the outfall siting. First, Pederson questioned the extent of shellfish closures that each siting would require. Second, the disposal of contaminated sediment is an issue that needs to be dealt with. Third, Pederson raised several technical and scientific questions concerning nutrient loading, increased deposition and tunneling through solid rock.

Finally, Al Slater discussed the DEP's role in the project. The DEP works on the review and approval of the plan. They also coordinate with relevant state agencies and have final authority over the financial costs and financing of the plan.

The TAC will review the plans for the New Bedford sewage treatment facility and submit its recommendation for any action by the Project to the Management Committee.

October 23, 1989

Joe Costa began the Monday meeting with an update on the Monitoring Plan. The TAC's Monitoring Plan Selection Committee recommended to award Science Applications International Corporation (SAIC) $65,385 to produce a monitoring plan for Buzzards Bay. Costa will ask that SAIC submit a progress report every two months. Costa also announced that November 9, 1989 is the deadline for research minigrant proposals.

Following Costa's remarks, a representative of the Soil Conservation Service gave a presentation on soil surveying. After an in-depth explanation of what a soil survey is, and how it is done, the representative explained how the survey could be used in the BBP. The surveys show the transport and fate of fluids in the soil system and rate the soils for particular land uses. These surveys can be used in management planning to demarcate areas particularly sensitive to groundwater contamination. The Soil Conservation Service has digitized soil types for all but the extreme western edge of Barnstable County and recommends that the BBP have that area digitized for its management plan.

Joe Costa summarized the status of the data management plan. At this point, the Project needs to delineate where the bay line should be drawn, divide the bay into high resolution areas and prioritize the data sets for entry into the BBP database. Costa asked the TAC for suggestions on what should be included in the database, and what criteria should be used to prioritize the data sets.

The meeting ended with a discussion of the New Bedford outfall siting. Concern was expressed that none of the outfall sitings would meet EPA standards. There was no consensus reached on where the outfall should be sited so, rather than make a recommendation, the TAC decided to draft a letter summarizing their comments and criticisms to MEPA before the end of the comment period.

Nonpoint...

continued from page 6

control septic tank pollution, a public education/outreach program, and before-and-after water quality sampling. A detailed management plan with specific recommendations, implementation activities, costs and schedule will be outlined in the final report.

Phinneys Harbor, Bourne

The Phinneys Harbor study area consists of the watersheds of Phinneys Harbor and Back River. Water quality analysis of Phinneys Harbor and Back River revealed frequent violations of Class SA fecal coliform standards. In comparison to Snell Creek, however, fecal coliform concentrations rarely exceeded 1,000 MPN per 100 ml. Similar to Snell Creek, rainfall clearly exacerbates fecal coliform violations. In addition to bacterial pollution, dissolved oxygen was depressed on several sampling dates, indicating that elevated nutrient concentrations may cause acclerated phytoplankton activity which can result in depressed dissolved oxygen readings. Therefore, water quality improvement objectives for Back River and Phinneys Harbor include bacteria and nutrient control. Potential sources of bacteria and nutrients in the area, as identified through data review and field reconnaissance, include storm sewers draining into Phinneys Harbor and Eel Pond; land development; cranberry bogs; septic tanks; waterfowl; and boats. Preliminary prioritization of sources indicates that stormwater control is warranted. Additional measures being considered include: coordination with cranberry bog operators for nutrient control, septic tank controls, public education/outreach, and before-and-after monitoring.

Guidance Document for Municipal Officials

In the absence of a well-established regulatory/institutional framework for controlling nonpoint sources, local municipal officials in areas experiencing water quality problems, such as Westport and Bourne, need technical and institutional assistance to develop local strategies. The guidance document will outline an overall process for assessing and controlling nonpoint sources. Manual users will be tied into a network of technical assistance related to the tasks required to develop pollution control strategies. Nonpoint source related agencies and organizations will be listed. The document will also outline regulatory considerations such as water quality standards and permit requirements, and potential funding sources.

Public and Agency Involvement

Development of the management plans and the guidance document has been facilitated by the participation of a project advisory group and the public. During August, the final project advisory group and public meetings were held in which participants were given the opportunity to comment on project activities, analyses conducted to date, and preliminary recommendations.

S.O.S. ...

continued from page 1

because of the specific water quality tests that they have run. Instead of having the lab test for fecal coliform bacteria, they had it test for enterococcus, a bacteria found in the intestinal track of humans and not in waterfowl. The results of the tests showed high levels of enterococcus, thus reducing the contribution of contamination attributable to waterfowl. It appears that failed septic tanks around the Cove are the major contributors to high bacterial contamination found in the waters of Aucoot Cove.

In order to directly identify the sources of coliform contamination in Aucoot Cove, more testing needs to be done. To do more testing SOS needs more money. The standard test for fecal coliform bacteria is $8 per sample. Other more sophisticated tests can cost as much as $18 per sample. Along with a need for more money to continue the work they are doing, SOS wished to expand its range, to begin to clean up all the near shore waters in Marion. In their search, they found help from the Buzzards Bay Project.

The Project's Advisory Committee, through the Community Minigrant Program, was awarding funds to support area towns and civic groups to address priority water quality, resource management and land use issues that would help to clean up the Bay. SOS applied for the maximum amount of $20,000 to continue their work in Aucoot Cove and to begin work in the other near shore waters of Marion; Wings Cove, Sippican Harbor, and the Weweantic and Sippican Rivers. SOS was one of several recipients of this funding. Although they still need to raise an additional $10,000 from residents of Marion to fund all the water quality tests they expect to run, SOS Chair Georgia McDonald doesn't see this as a problem, ". . . people are willing to pay to improve water quality - most are shocked to see how far the water quality has declined."

Barbara Sego

Canada Geese in flight over the Aucoot Cove area in Marion.

Glossary

A Regular Feature of the Buzzards Bay Project Newsletter

Compost - A mixture of decomposing organic matter (vegetation refuse, manure, etc.) that is used for fertilizing soil.

Conservation Easement - In legal terms, an easement is any privilege or right of way which one man or governing body has in the land of another (owner). This privilege can be exercised without renumeration or profit, as a right of way, access to water, air, etc. A conservation easement is used to provide for the care and protection of natural resources, especially land. A property owner can also give a town or a non-profit, such as a land trust, these privileges.

MPN (Most Probable Number) - An estimate of the mean density of bacteria in a 100 milliliter (ml) sample. The MPN can be calculated by doing a series of dilutions until the number of bacteria is small enough to be counted. Based on the assumption that there is a random distribution of bacteria in the sample, the number of bacteria in the dilution can be translated to a MPN by using specialized probability formulas. The Massachusetts Division of Marine Fisheries closes shellfishing areas when the fecal coliform count exceeds 14 MPN in a 100 ml sample.

Percolation Test - A means of determining the suitability of soil for the subsurface disposal of sewage by measuring the rate at which water percolates into the ground in a test pit.

Pumpout - The process through which septage is removed from a tank, usually by a mobile tank attached to a truck and then brought to a treatment center.

Septage - The material in a septic tank.

Title V - The state regulations that provide for minimum standards for the protection of public health and the environment when circumstances require the use of individual systems for the disposal of sanitary sewage. The local Board of Health is responsible for the enforcement of these regulations.

Wetlands Restriction Program - A program begun by the state to restrict the development of wetlands (all areas stated under the Massachusetts Wetlands Protection Act). It was conducted on a town by town basis; first, mapping the wetlands areas within the town; second, determining which areas were to be restricted; third, public hearings were held to reconcile the lines that were drawn; and fourth, attempts were made to record restrictions on all applicable deeds. The restrictions act like Order of Conditions, listing what can and cannot be done on the property. The Program was unsuccessfully challenged in the Courts and was not active for the past few years. The Department of Environmental Protection's Wetlands Division is looking to restart the program if funding becomes available.

Wharfinger - The operator or manager of a commercial wharf.

Directory of Environmental Organizations in Buzzards Bay

by Frances Brewster, Newsletter Staff

A primary goal of the public education program of the Buzzards Bay Project is to provide information and resources to communities in the region. This and upcoming newsletters will feature a town by town list of area organizations involved with some aspect of environmental concern. In this issue are the towns of Carver, Middleboro, Plymouth and Wareham. If you know of any group or organization that should be included in this list please contact the Lloyd Center at (508)990-0505.

CARVER

Town Offices
Carver Town Hall
Main Street
Carver, MA 02330
(508) 866-2561

Web of Life Outdoor Education Center
P.O. Box 530
Carver, MA 02330
(508) 866-5353
Contact: Sharon Young - Manager

MIDDLEBORO

Town Hall Offices
Nickerson Avenue
Middleboro, MA 02347
Board of Health, 947-0928
Conservation Commission, 947-0511
Planning Board, 947-0928
Selectmen, 947-0928
Sewerage Department, 947-4853

Department of Environmental Protection
Southeast Office
Lakeville Hospital
Main Street
Middleboro, MA 02346
(508) 946-2700
Gilbert T. Joly - Regional Director
Robert Fagan - Regional Engineer for resource protection
Jeff Gould - Section Chief for water pollution

Department of Education
Southeast Regional Education Center
Human Services Building, Suite 2
Lakeville Hospital
33 Main Street
Lakeville, MA 02347
(508) 947-1231

The Pilgrim Resources Conservation & Development Area Office
40-48 North Main Street
Middleboro, MA 02346
(508) 946-1558
Contact: Marc A. MacQueen - Executive Director

The BUZZARDS BAY PROJECT

FACT SHEET 11/89

STORMWATER RUN-OFF

What is Stormwater Run-off?

Stormwater run-off is water that drains directly off land or through storm sewers into surface waters after a rainfall or snowmelt. Because it transports pollutants to water bodies, stormwater run-off has become a major water quality concern. The Buzzards Bay Project, which is part of the National Estuary Program, has been studying problems related to stormwater run-off and its impact on the environment.

Why is Stormwater Run-off a Problem?

Historically, stormwater run-off was managed to curb or eliminate local flooding. Engineers designed streets and other developments so that excess water would collect in drainage basins, ditches and pipes then be directed to the nearest river, stream or coastline. Consequently, stormwater flows from streets, parking lots, rooftops, lawns and agricultural lands into our coastal waters causing bacterial, nitrogen and toxic contamination.

Bacterial Contamination

In Buzzards Bay, stormwater is considered one of the most significant sources of bacteria responsible for closing over 13,000 acres of shellfish beds and many beaches in Buzzards Bay.

Many older cities such as New Bedford built their storm and sewer systems using the "single pipe" or combined sewer approach, combining sewage waste from residences with stormwater. During heavy rainstorms, waste treatment facilities in New Bedford are unable to handle both the sewage and the stormwater, and the untreated excess flow is discharged directly into Buzzards Bay through overflow pipes. These discharges are called "combined sewer overflows" (CSO's). CSO discharges are generally heavily laden with bacteria and other pollutants.

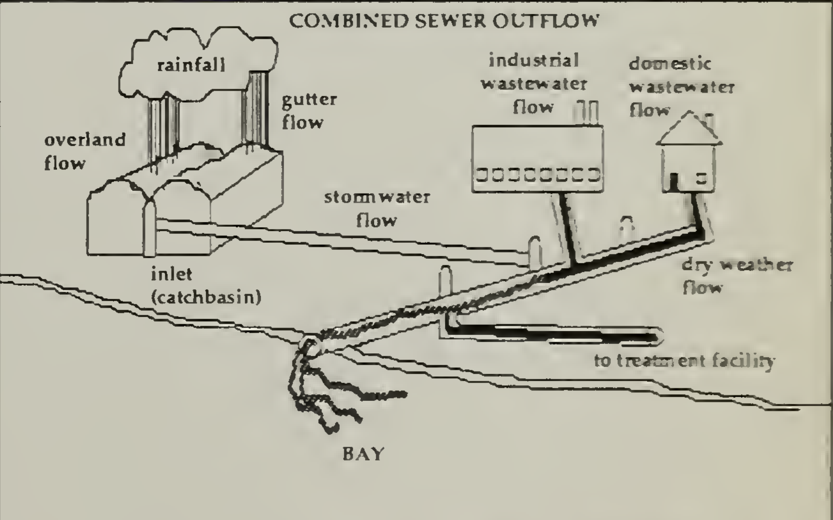
Although New Bedford's combined sewer approach is not as effective as a separate or multiple pipe approach, it can be improved by using CSO detention areas and innovative treatments. A multiple pipe system consists of pipes carrying the residential wastewater and separate pipes carrying the stormwater. This allows the wastewater treatment plant to function more effectively during periods of heavy rainfall. However, this kind of system still does not solve the problem of stormwater collection pipes discharging directly into our bay or rivers. Even uncombined with residential wastewater, stormwater carries high concentrations of bacteria and other pollution which contaminate our waters. In some embayments direct overland run-off can be an important source of pollution to surface waters.

Nitrogen Contamination

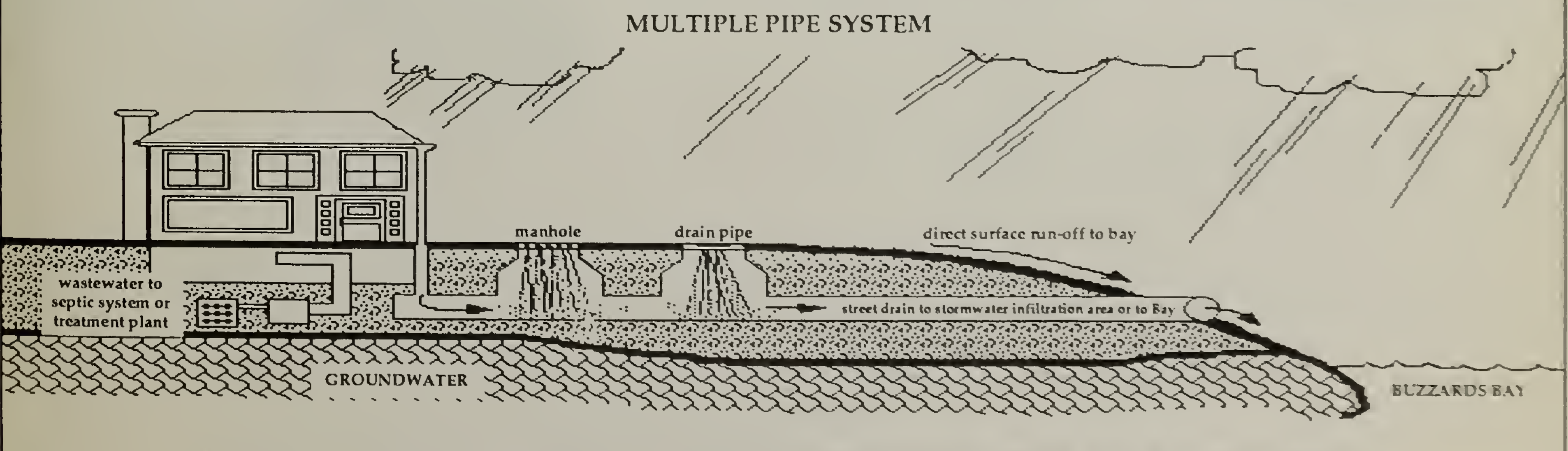
In addition to bacterial contamination, stormwater run-off also transports nutrients. For example, nitrogen from fertilizer applications on lawns, golf courses, agricultural lands and overflowing septic systems enters receiving water bodies. Excessive amounts of nitrogen added or "loaded" to coastal embayments increases algae growth and can result in a general decline in the quality of the coastal ecosystem. The Buzzards Bay Project is studying nutrient enrichment through a pilot project in Buttermilk Bay. Another fact sheet will address this issue in greater detail.

Toxic Contamination

Heavy metals, engine oil, gasoline, radiator fluid, insecticides and detergents also end up in stormwater flow. The relative importance of these pollutants in stormwater depends on the degree of urbanization, the types of land use and the level of automobile traffic. Removal of some of these types of pollutants by treatment systems is difficult; therefore, the key to protecting the Bay is preventing toxic contaminants from entering the environment through proper use and disposal.



Stormwater, industrial and domestic wastewater combine and flow into receiving waters from one pipe.


MULTIPLE PIPE SYSTEM
manhole
drain pipe
direct surface run-off to bay
wastewater to septic system or treatment plant
street drain to stormwater infiltration area or to Bay
GROUNDWATER
BUZZARDS BAY

A multiple pipe system consists of pipes carrying residential wastewater and separate pipes carrying stormwater.

The Buttermilk Bay Study

Scientists of the Buzzards Bay Project have studied solutions to the direct discharge of stormwater into the bay. One demonstration project in Buttermilk Bay, a small embayment of Buzzards Bay, involves installing two stormwater detention systems. Because the pollution problems in this embayment are typical of dozens of other embayments around Buzzards Bay, much time and effort is going into studying Buttermilk Bay and solutions to its problems.

The stormwater treatment systems being installed at two discharge points on Buttermilk Bay are to demonstrate better ways to manage the problem of stormwater run-off. Although the systems are designed differently to compare their long-term effectiveness, they both function under the same principle -- to prevent stormwater from discharging directly into the bay. System A collects the stormwater, separates out floating petroleum products, settles out solids, and then allows the remaining liquid to leach through unsaturated soil into the groundwater. System B collects and detains the stormwater in a dry pond and also allows it to percolate through unsaturated soil into the groundwater.

In both systems the unsaturated soil filters out almost all of the bacteria, emulsified petroleum products, heavy metals, significant amounts of pesticide residues and certain nutrients in stormwater.

How Can Towns and Individuals Better Manage Stormwater Run-off?

Several steps can be taken by towns to improve their stormwater management efforts. Initially, towns can inventory direct stormwater discharges and schedule their repair. The following are criteria towns can use to list priority discharges:

- size of discharge
- quality of discharge
- location of discharge in relation to sensitive areas of shellfishing and bathing beaches
- cost of remedial actions

Once priority areas have been established, the towns can then schedule improvements.

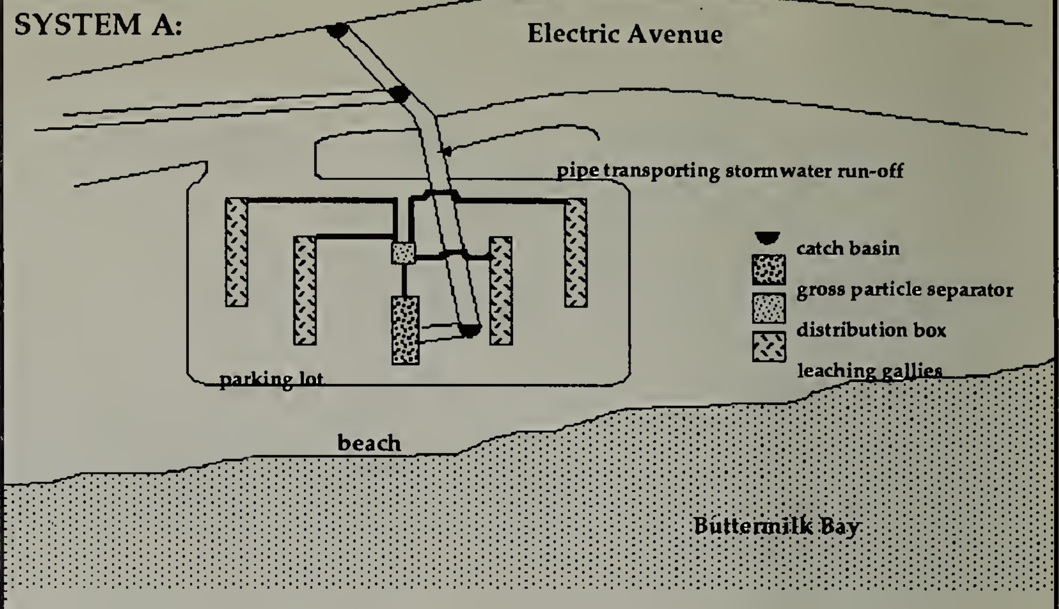
Planning Boards and Conservation Commissions, by requiring paved areas (driveways, patios, etc.) to be minimized and requiring roof and road run-off to be directed into areas of vegetation where it can naturally infiltrate the soil and recharge the groundwater, will minimize stormwater run-off in future development, and reduce subsequent water pollution problems in Buzzards Bay. Individuals also can play a role in stormwater management through wise use and proper disposal of pesticides, fertilizers, motor oil and other harmful materials.

REFERENCES CITED

1. Heufelder,George R. Bacteriological Monitoring in Buttermilk Bay, U.S. EPA contract #BBP-88-03. September 1988.

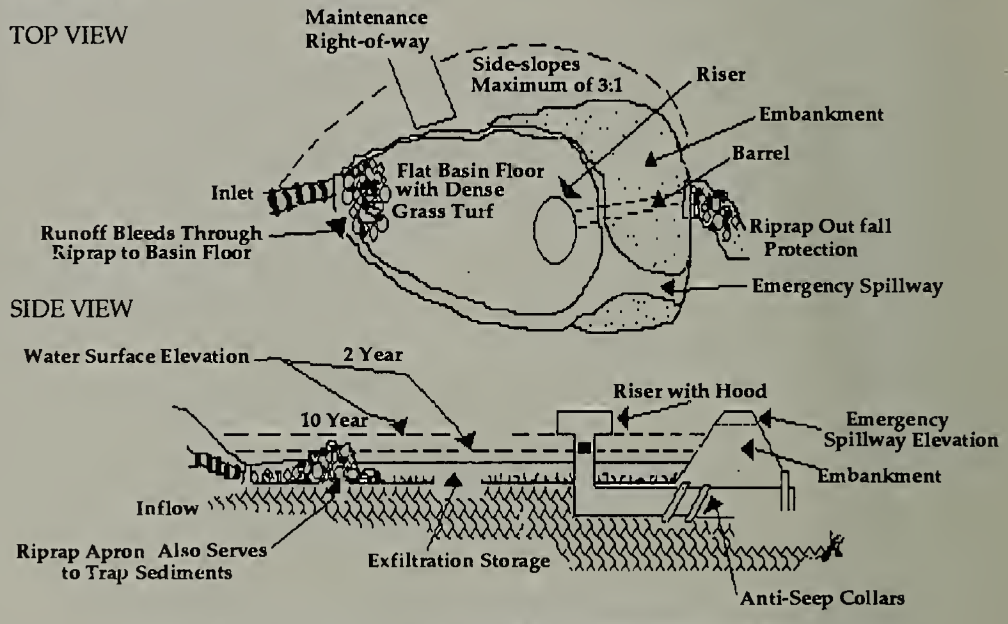
2. Controlling Urban Runoff: A Practical Manual for Planning and Designing Urban BMP's. July 1987.

SYSTEM A:



Stormwater collects in catch basins, then is diverted into a gross particle separator where large particles are settledout and the remaining liquid is discharged through leaching gallies.

SYSTEM B:


TOP VIEW
Maintenance Right-of-way
Side-slopes Maximum of 3:1
Riser
Embankment
Barrel
Flat Basin Floor with Dense Grass Turf
Inlet
Runoff Bleeds Through Riprap to Basin Floor
Riprap Out fall Protection
Emergency Spillway
SIDE VIEW
Water Surface Elevation
2 Year
10 Year
Riser with Hood
Emergency Spillway Elevation
Embankment
Inflow
Riprap Apron Also Serves to Trap Sediments
Exfiltration Storage
Anti-Seep Collars

Stormwater is funneled to the inlet where it passes through to a dry pond. The stormwater then percolates through the soil to the groundwater.

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40-48 North Main Street
Middleboro, MA 02346
(508) 947-7863
Contact: Paula Driscoll - District Administrator

Soil Conservation Service USDA
Plymouth County Field Office
40-48 North Main Street
Middleboro, MA 02346
(508) 946-0272
Contact: Joseph P. Cooney - District Conservationist

Water Department
48 Wareham Street
Middleboro, MA 02346
(508) 947-0090

PLYMOUTH

Town Hall Offices
11 Lincoln Street
Plymouth, MA 02360
(508) 747-1620

Manomet Bird Observatory
P.O. Box 936
Manomet, MA 02345
(508) 224-6521
Contact: Linda Leddy - Executive Director

Plymouth County Wildlands Trust
P.O. Box 1732
Plymouth, MA 02360
(617) 934-9018
Contact: Alan C.F. Leggett - Executive Administrator

WAREHAM

Wareham Town Offices
Wareham Town Hall
54 Marion Road
Wareham, MA 02571
(508) 291-3100
Board of Health, 291-3197
Conservation Commission, 291-3180
Department of Natural Resources, 291-3180
Contact: Kathy Forand or Sandy Mendes
Recreation Department, 291-3182
Contact: Carolyn Lynch
Planning Board, 291-3185
Contact: Jay Grande
Selectmen, 291-3180
Committees:
Marine Resources Commission (Ira Somerset)
Master Plan Study Committee (John Grande)
Recreation Committee (Marjorie M. Crabtree)

Cape Cod Cranberry Growers Association
P.O. Box 518
East Wareham, MA 02538
(508) 295-4895
Contact: Jeffrey Carlson - Executive Director

Committee to Save Onset's Beaches
P.O. Box 1727
Onset, MA 02558
(508) 295-2460
Contact: Marilyn Knowlton

Concerned Citizens of Nanumet Heights
P.O. Box 1666
Onset, MA 02558-1666
(508) 295-4686
Contact: Frank A. Tramontozzi

Cranberry Experiment Station
P.O. Box 569
East Wareham, MA 02538
(508) 295-2212
Contact: Irving Demoranville

The Garden Club of Wareham
P.O. Box 3276
Wareham, MA 02571
(508) 295-5310
Contact: Carole Bacchieri - President

Harbormaster
Onset Avenue
Wareham, MA 02571
(508) 295-8160

Onset Protective League
PO Box 81
Onset, MA 02558
(508) 295-8159
Contact: Albert Fisher - President

Sewerage Department
Route 6
Wareham, MA 02571
(508) 295-0450

USDA Agricultural Stabilization & Conservation Service
(ASCS)
2510 Cranberry Highway
Wareham, MA 02571
(508) 295-6860
Contact: Paul Russell - Executive Director

Wareham Open Space Support Group
c/o Wareham Conservation Commission
Wareham Town Hall
Wareham, MA 02571

Wareham Shellfish Association
2 Tims Point Road
Wareham, MA 02571
(508) 759-5226
Contact: Donna or Paul Girard

Water Department
271 Main Street
Wareham, MA 02571
(508) 295-0450

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Ideas for articles or photographs for The Buzzards Bay Project Newsletter should be submitted to Barbara Sego, Lloyd Center. The deadline for the next issue is January 26, 1990.

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